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ABSTRACT

A natural science resource booklet for teachers and students contains detailed materials for teaching and learning about Alaskan wildlife. Each of nine chapters provides background subject information, suggested learning activities, tear-out pages of review questions for students to answer, and supplementary notes for teachers which include chapter behavioral objectives, major concepts to emphasize, and suggestions for presentation of the material. The introductory chapter discusses how much of Alaska's wildlife migrated to Alaska from Asia by way of a land bridge during the Ice Age and explains that the location of Alaskan wildlife is determined by climatic conditions. The next seven chapters focus on hoofed animals, bears, fur bearing animals, rodents, strange water mammals, fish, and birds. The concluding chapter presents information on animal tracks and includes scale drawings of moose, elk, muskox, brown bear, beaver, lynx, red fox, wolverine, otter, mink, marten, procupine, and snowshoe rabbit tracks. (NEC)

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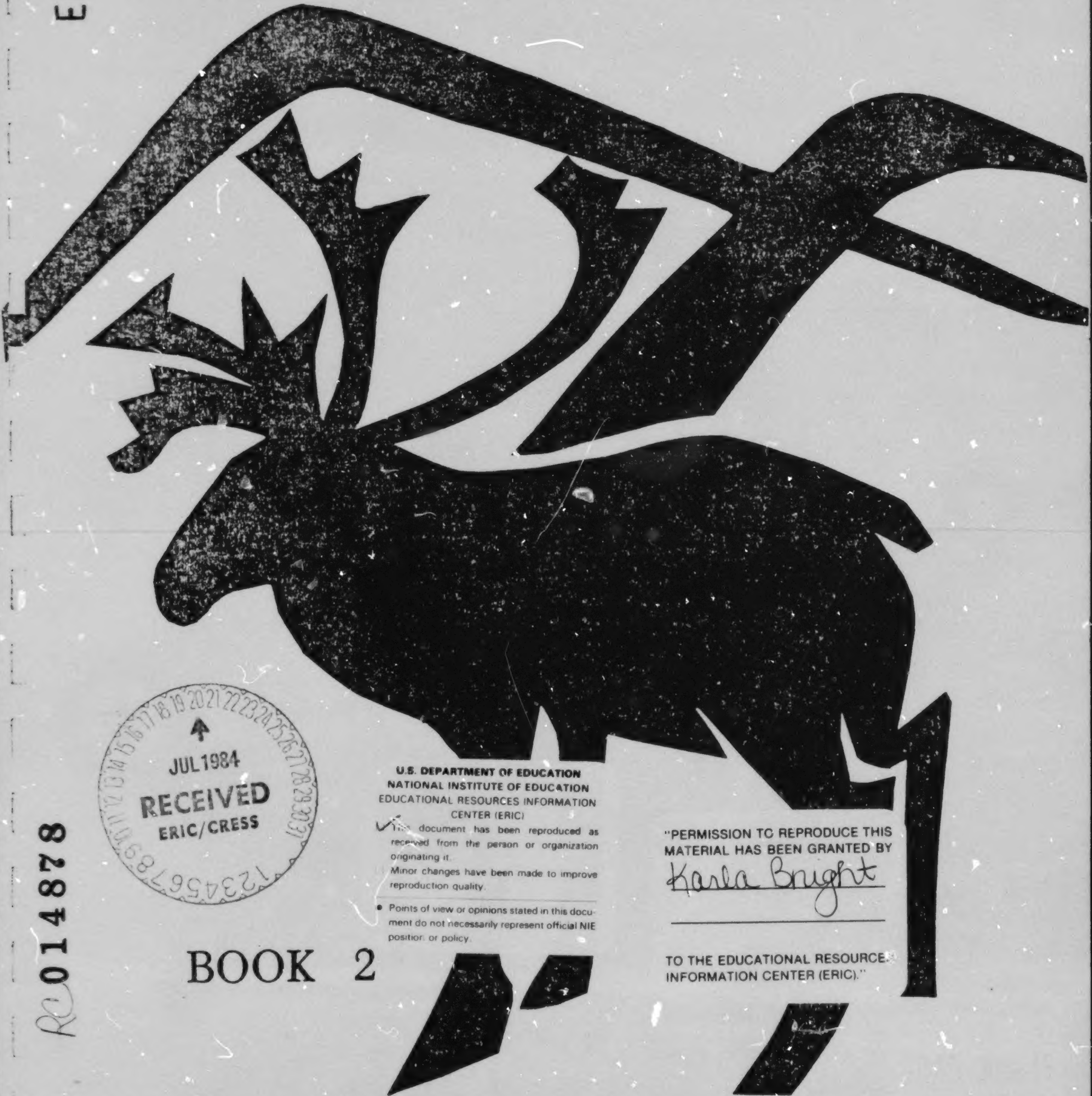
# ALASKA IS OUR HOME



BOOK 2

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# ALASKA IS OUR HOME

## BOOK 2

A Natural Science Handbook
for Alaskan Students

John and Susan Bury
Alaska Rural School Project
College, Alaska

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Alaska Rural School Project

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# ALASKA WILDLIFE

It is difficult to imagine that during the Pleistocene, or Ice Age, only 25,000 years ago, there lived in Alaska giant mammoths similar to elephants but with hairy coats, enormous bearlike beasts, animals that looked like half moose and half elk, bear-sized beavers and ground sloths.

In the thick forest and on the plains roamed herds of yaks, regal bison, zebra-like horses, lions, and long-legged, long-necked camels. There were also sabertoothed tigers and enormous wolves. Since much of Alaskan soil is now frozen permafrost, the remains of many animals have been found in almost life-like condition. For example, carcasses and hides with hair have been found in Kotzebue Sound and near Fairbanks.

## Animals of the Ice Age

The following animals have been catalogued as existing in Alaska during the Ice Age.[1]

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[1] Frank Dufresne, Alaska's Animals and Fishes, (Portland: Binfords & Mort, 1955), p. 14.

Lion
Saber-tooth
Dire Wolf
Timber Wolf
Arctothere
Black Bear
Giant Elk-moose
Elk
Moose
Caribou
Antelope
Mountain Sheep
Ground Squirrel
Lynx
Musk Ox
Yak
Regal Bison
Camel
Horse
Woolly Mammoth
Mastodon
Ground Sloth
Giant Beaver
Wolverine
Coyote
Fox

The most vicious and fearsome of these Ice Age animals was the huge Arc tothere bear which, oddly enough, has as its nearest relative the small "spectacle bear" of the Andes. Also, the ground sloth once found in Alaska is now found only in Latin and South America. And, the swollennose antelope, that existed in Alaska during the Pleistocene Age, has as its closest relative the Saiga antelope found in Asia.

How did these animals migrate to and from Alaska during the Pleistocene Age? It is believed that a land bridge connected Asia with Alaska at this time. Later, with the melting of the Ice Age this bridge was covered by the rising ocean. Many scientists believe the ancestors of the native American people also used this land bridge to migrate from Asia.[2]

## CLIMATE: A DETERMINER OF ALASKAN LIFE

The extreme contrast of climate in Alaska is mainly responsible for the great number and variety of plants and animals. For study purposes Alaska can be divided into four animal regions: The Pacific Coastal region, the Interior, the North Slope, and the Aleutian Islands.

### Pacific Coastal Region

The Pacific Coastal Region of Alaska, commonly called the Panhandle or Southeastern, is dotted with over 1,100 islands. Thousands of snow-capped peaks overlook enormous glaciers stretching towards the ocean. The winters are temperate, rarely going below zero, averaging around freezing, and the summers are cool. This area receives a heavy amount of moisture, from 60 to 175 inches per year.

All of the land aside from Glacier National Monument, the Borough-City districts and the Metlakatla reservation is part of the Tongass National Forest. This region is a dense rain forest covered with majestic hemlock, spruce, and cedar, offering 16 million acres of commercial timber. The islands and the bordering mainland are populated with Sitka blacktail deer, brown, grizzly, and black bears, timber wolves, and moose in the mainland valleys. Near the glaciers on the mainland mountain goats can be found. There are fur animals such as mink, marten, land otter, wolverines, weasels, and an occasional beaver. Salmon and trout abound in the cold streams. The coastal sea life includes halibut, seals, porpoises, sea lions, and whales. Grouse, ptarmigan, Steller's jay, golden and bald eagles, and many song birds are found.

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[2] Dufresne, pp. 9-15.

### Interior

The Central Plateau, more commonly known as the Interior, lies between the Alaska Mountain range and the Brooks Mountain range. It encompasses the great Yukon and Kuskokwim river systems. This area experiences long cold winters and short warm summers of eighteen to twenty hours of sunlight daily. The area is quite dry, receiving nine to nineteen inches of moisture per year, little of which is snow. Slightly over 80% of the area is made up of forests of small spruce, birch, aspen, cottonwood and poplar. These forests are broken and found along the valley floors and lower mountain slopes. The major point of division between the Interior and the more mild Pacific Coastal area is Mount McKinley which at 20,300 feet is the tallest mountain on the North American continent.

The combined Yukon-Kuskokwim deltas provide ten thousand square miles of some of the best land for nesting waterfowl in the world. Here is found the white-fronted goose, green-winged teal, harlequin, pintail, and mallard ducks, with grouse and willow ptarmigan found on the uplands. The fish life includes Arctic grayling, salmon and trout. The Interior is populated with moose and caribou, with snow white Dall sheep on the high mountain slopes. Other animals include the black bear, grizzly bear, brown bear, lynx, foxes, beaver, muskrat, marten, mink, wolverine, weasels, coyotes, timber wolves and snowshoe hares.

## North Slope

The Arctic Plains region, better known as the Arctic Slope or the North Slope, is the farthest north region. It slopes from the Brooks Range down to the Arctic Ocean. The climate is cold and dry, with only four to eight inches of moisture per year which makes it as dry as the Arizona desert. Most of the area, which accounts for one-sixth of the State, is flat or rolling and cut with many rivers draining into the Arctic Ocean.

The flora consists mainly of mosses, bright flowers lichens, berries, and grasses. There are few stands of timber and these are stunted due to the extreme cold. In this forbidding country the caribou, timber wolf, red fox, weasel and polar bear are at home. The white fox and the polar bear are found along the Arctic Coast. In the streams are grayling, pike, and shee fish, with seals, walrus and whales in the ocean. Because of the above, this country, seemingly the most barren part of Alaska if not the world, has supported the largest native group of people, the Eskimo, for thousands of years.

## Aleutian Islands

The Aleutian Islands stretch more than one thousand miles to the west from the Alaska Peninsula to within six hundred miles of Kamchatka, Siberia. These islands are treeless. Fog-bound mountain tops stick up from the ocean floor, with twenty being active volcanoes. Wildlife is sparse, consisting of sea birds, sea lions, sea otters, and transplanted blue foxes. The United States government protects fur seals on the Pribilof Islands.

## MAMMALS

The most famous of Alaska's wildlife are the mammals. What is a mammal? First and most important it is warm blooded. To be warm blooded is to have the same blood temperature regardless of the coldness or heat of the environment. A mammal has hair or fur on its body and as a baby is fed on its mothers milk. Mammals of Alaska can be classified into four groups which are the flesh-eating mammals, hoofed mammals, rodents, and strange water mammals.

The flesh eaters are called "carnivorous" and include such animals as wolves and foxes. Alaska has the largest carnivores in the world, the largest being the Kodiak brown bear. Size alone does not determine whether a mammal is a flesh eater or a plant eater (herbivore). The weasel is a good example to show that not all flesh eaters are large. This small mammal is one of the most vicious and fearless of all flesh eaters and is capable of killing animals several times its size.

The hoofed animals include the deer, caribou, and two of the largest herbivores, the moose and bison. Mice, squirrels, beaver, and muskrats are classed as rodents. The strange water mammal class is made up of whales, porpoises, seals and walrus.

Some "carnivorous" animals such as the brown bear also eat plants like skunk cabbage and berries. These animals are called "omnivorous" which means that they eat both flesh and plants.

## EXERCISES

1. Adopt one animal such as a squirrel, bird, dog, or cat, and carefully observe its habits according to a daily schedule. Keep a notebook telling where it lives, how it gets its food, what time of day it is most active, and sc on. Observe as many of its activities as possible.
2. Try to find evidence of any prehistoric animals that might have lived in your area. Check with local lodge owners who have been in the area for many years, and with any local sourdoughs.
3. Keep an animal chart of wildlife types found in your area of Alaska. List the animals by the date you see them and try to mark down as much as you can about them: i.e., tracks, sex, size, color, activities, and so on. Also list signs of other animals not actually seen, such as tracks, tufts of hair, scats, scraped trees, and so on.
4. Make a chart of the mammals in your area and classify them according to whether they are flesh eating, plant eating, hoofed, rodents, or sea animals.

# REVIEW QUESTIONS

These questions are in order of the material in this unit. Tear out this page and look for the answers as you reread the material.

1. Study the Ice Age animals described on page 120, and list those that can be found in Alaska today.
2. It is believed that the Ice Age animals and possibly the ancestors of native Americans migrated to Alaska across a ________ ________ from ________.
3. The extreme contrast of ________ in Alaska is mainly responsible for the large number and variety of animals.
4. How many kinds of seals and whales are there in the ocean waters surrounding Alaska?
5. List the three major characteristics of a mammal.
6. Flesh eaters are called ________.
7. Plant eaters are called ________.
8. The largest carnivore in the world lives in Alaska. It is the _______.

## NOTES FOR TEACHERS

The first unit of this thesis consisted of geologic, geographic, and climatic descriptions of the natural house of Alaska. Units 2 (Wildlife) and 3 (Plantlife) consist of the life forms found within this natural house and how these life forms are dependent on one another to make an ecological whole. The introduction to Unit 2 is devoted to three basic concepts which are:

(1) That much of Alaska's wildlife most likely migrated to Alaska by way of the land bridge from Asia during the Ice Age and these animals developed when Alaska was a swamplike jungle, which is difficult to imagine since most of the northern hemisphere was covered by glaciers at this time.

(2) The location of Alaskan wildlife is determined by climatic conditions.

(3) Mammals are identified as being warm-blooded, having hair, and the young are fed on their mother's milk. They are classified as hoofed animals, bears, fur-bearing animals, rodents, and strange water mammals; and also as plant eaters and flesh eaters, or both.

It is not necessary for the student to know all the pre-historic animals but after reading the introduction he should be able to relate, using a map, where the land bridge probably was.

The student should be able to tell, preferably by using a map, the four climatic animal regions in Alaska. He should be able to list the most common animals found in these regions. He should also locate his own community as related to one of these regions and from his own experience list the animals found around his community. Exercises 3 and 4 are best suited as specific behavioral objectives with the teacher determining on an individual basis the criteria necessary for evaluation.

The section on mammals is based on basic natural science concepts that the student should specifically learn before continuing.

The student should define in writing or orally the following: mammals; the five groups of Alaskan mammals; carnivores; herbivores.

Given a specific example of a mammal, the student should be able to tell why it is a mammal, to which of the five groups it belongs, and whether it is a carnivore or herbivore.

## Chapter 4

## HOOFED ANIMALS

### Moose

The Alaskan moose is the largest found in North America. It is estimated that thirty thousand inhabit this region.[1] Ancestors of the present-day population probably migrated to the Northland across the Bering Land Bridge from Siberia over a million years ago. They roamed as far south as the present state of Virginia.[2]

In Alaska, the moose is now found on the Kenai Peninsula, Rainy Pass, and surrounding Cook Inlet, and in the Yukon, Tanana, Kuskokwim and Copper River valleys. It is also found in the mainland valleys of Southeastern Alaska. Most animals average six-and-a-half to seven-and-a-half feet in height, attaining a weight of 12 to 14 hundred pounds, and extending approximately ten feet in length.

Despite its appearance, the moose is a quick, well-coordinated animal with powerfully built forequarters and smaller hindquarters, ending in a two to three inch tail.

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[1] Frank Dufresne, Alaska's Animals and Fishes, (Portland: Binfords & Mort, 1955), p. 27.

[2] Leonard Lee Rue III, Sportsman's Guide to Game Animals, (New York: Harper & Row, 1969), p. 487.

By comparison, its ears are longer than a mules. The legs keep the belly forty inches above the ground.[3] The hoof masks four toes, with the two hind ones called dew claws that spread apart to give support in boggy swampy areas where the moose spends most of his time during the summer. His coloring, usually a black--shading into dark brown and russet--enables him to blend into the environment. The hair is filled with air cells that make it coarse and brittle and give the moose warm protection against cold Alaskan winters.

Moose remain generally in the same area throughout the year. Bull moose prefer to band together on the mountain sides, whereas the cows prefer the rivers. During the mating season a bull may travel miles from his area looking for a mate.

The moose browses for his food and likes willow twigs most. In summer he will feed in ponds to free himself from the heat and insects and to eat water lilies, pond weeds, sedges, and eelgrass. The moose is not a fussy animal and will eat whatever is available in plantlife if his favorite willows and lily pads are not available. He can feed ten feet off the ground by stretching his neck.

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[3] Rue, pp. 487-489.

The moose has a four-chambered stomach and chews its cud like a milk cow. This type of animal is called a ruminant.

In winter when the temperature is fifty below the moose, like a sled dog, needs about five inches of snow to sleep in and protect his body. If he has packed down all the snow in his area or there is too little snow, he will move on a ways for more snow.

The sense of hearing and smell of the moose is highly developed, but his eyesight is poor, making him unable to distinguish an animal or human enemy if it is not moving. He communicates by making a noise like a coughing grunt, or a wail, whine, bawl, and bellow similar to a domesticated cow.

Moose, when alarmed, are quite strong. They can run fast due to their large lungs, and have been timed at a top speed of 45 miles per hour.[4] They are also very strong swimmers since their hollow hair functions like a natural life preserver.

The bull moose possesses horns. He uses them to fight other males during the mating season. His antlers start to grow in April and are shed in late December or January. Full size (as large as 65 to 70 inches across and weighing up to 90 pounds) is reached in August with the velvet coming off in September.[5]

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[4] Rue, p. 494.

During the rutting, or mating, season, September fifteenth to November first, the bull's long antlers gleam and his temper is short. His most intense interest is to find a mate. He will go without food, attacking anything or anyone, whether it be a railroad train or a human being. During this period, the male fights can be for the favor of a cow or to show off its strength. Some conflicts end in death.

During the breeding season bull moose will often make wallows or pond pits about six to ten inches deep. The bull moose stays with one cow at a time, although he may mate with several cows during a season.

The gestation period, or time the cow carries her calf, is from 240 to 246 days with birth coming in May or June.[6] A cow moose angered over the safety of her calf can be considered as dangerous as a sow grizzly bear. The calves are driven off by their mothers with the coming birth of new calves. Ten to fifteen years is a normal life span for moose, with the ability to breed coming at

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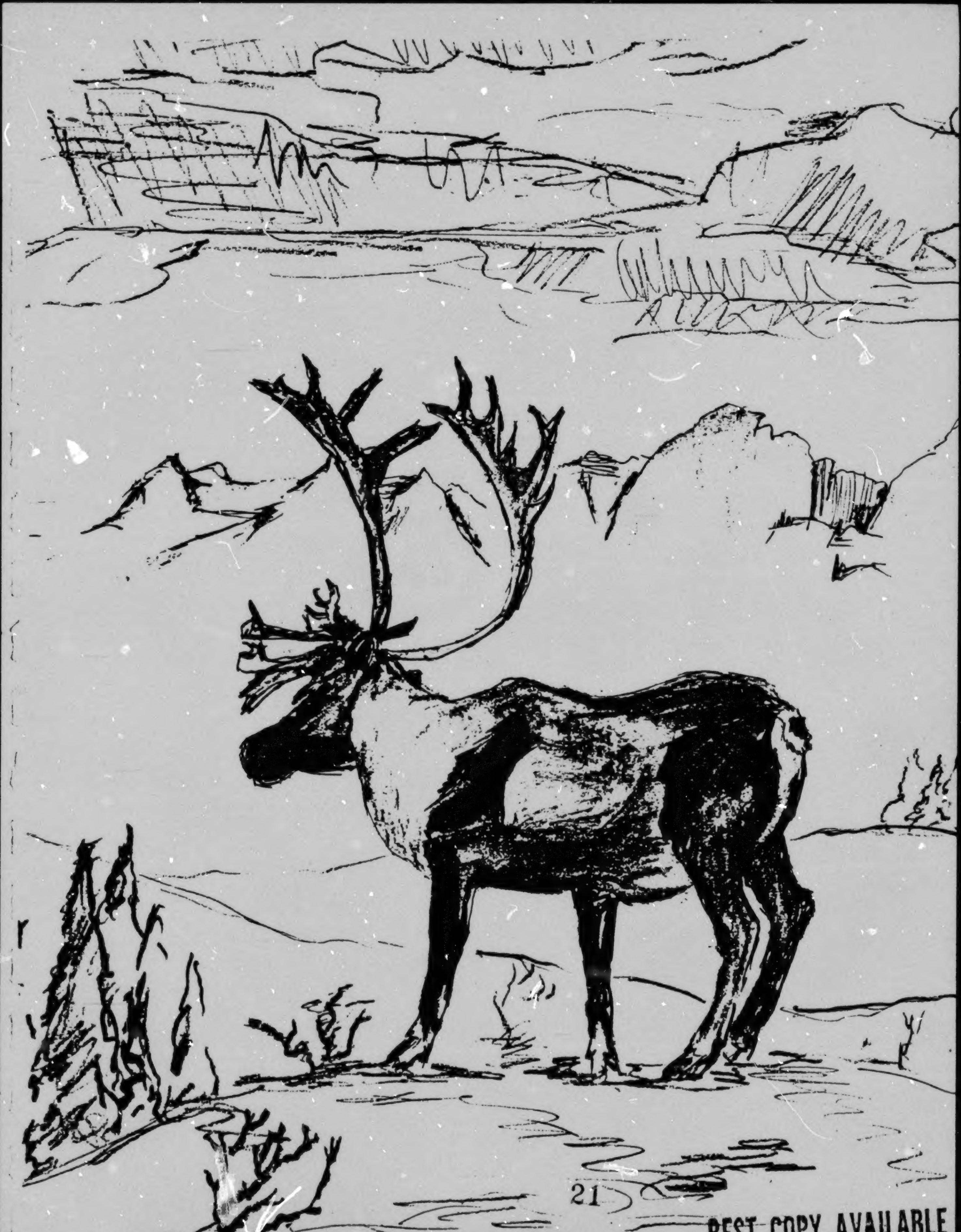
[5] Rue, p. 495.

[6] Rue, p. 496.



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sixteen months. Twenty to twenty-five years is considered old age.[7]

The calf weighs about 20 to 25 pounds and has a light reddish brown coat that is not spotted. It is helpless for only a few hours and then is able to run as fast as a man.[8]

The wolf and bear are the moose's most dangerous animal enemies. However, they are rarely able to bring down and kill a healthy moose with its great strength and size. The wolf and bear prey on the sick, old, or calves unable to defend themselves. Starvation and parasites are the greatest killers of moose.[9]

The moose is one of the most important sources of food in Alaska, not only for the native, but also for the homesteader. A moose carcass can feed a family for a year and the hide provides good leather.[10]

## Caribou

The caribou, who was named by the Indians,[11] is considered a newcomer to big game animals on this continent and is believed to have "crossed the Bering land bridge from Asia to Alaska sometime during the mid-Pleistocene period about a million years ago."[12] It is popularly called the reindeer in Europe, but has the same scientific name, the "rangifer Tarandus". The geographic range of this animal extends from the high plateaus and mountain slopes of the Interior to the Arctic slope regions between the Alaska and Brooks mountains.

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[7] Rue, p. 497.

[8] Rue, p. 496.

[9] Rue, p. 499.

[10] Adolph Murie, A Naturalist In Alaska, (New York: Anchor Books, 1963), pp. 103-117.

[11] Rue, p. 503.

A bull caribou will stand up to five feet at the shoulder and weighs up to 400 pounds, with the females smaller in size and weight.[13]

Of all the deer family the caribou is the only one in which both the male and female have horns. The bull's antlers are considerably larger with as many as 20 points on each of two broad beams, and with a third beam protruding over the nose. The males lose their magnificent antlers in December or January and the females lose theirs in the spring. During the summer they grow a new coat and a new set of horns.

The winter coat of the caribou is made like the moose with air-filled guard hairs. Beneath this lies a thick curly underfur. The caribou found near Southcentral Alaska have a light brown coat. Whereas the caribou to the north have a dark brown coat with the older bulls having silvery-white necks. By late winter and early spring the coats fade and become a dirty yellow.

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[12] Rue, p. 503.

[13] Rue, p. 503.

The caribou is considered the most eccentric and hard fighting of the deer family. He may or may not fight. He may run or charge and quite often he might momentarily misidentify a moose, horse, or milk cow for another caribou.

The hoofs of the caribou are their most unique adaption to their environment of rough boggy tundra. These hoofs are as large as the moose although the caribou is only one-third to one-fourth the size of a moose. The shape is round and when spread out measures wider in width than length. They act like snowshoes in the wet tundra and on snow enabling the caribou to cover as much as sixty miles a day.

Another unique distinction of the caribou is that his foot tendons click while walking. This sound is loud enough to be heard for some distance. Like the moose, the caribou has a four-chambered stomach which can store strong mosses and lichens that are softened by digestive juices, later being regurgitated, chewed, and finally digested.

Caribou are the most migratory of all mammals. They roam the year around, moving in response to changes in the weather, wind, food, predators, insects and man. The lichen is the most important of all caribou food. Unfortunately, lichen is a slow-growing plant which requires as long as eight to ten years to replenish a previously eaten area.[14] After eating caribou lie down to digest their cuds, but they rarely settle in one place for more than a few hours.

The caribou migrate individually to lessen the odds of attacks by predators, for they do not defend themselves as a group.[15] They are difficult to frighten because they can usually outrun their enemies. Like the moose, the caribou's most important sense is that of smell, and they rely on this instinct for preservation. But, unlike the moose, their sense of hearing is limited to the degree that they have been known to be captured alive while sleeping.[16]

The caribou communicates more by body movement than by making cow-like noises. Body communication comes from running and lowering the head, moving the tail, holding the body rigid in certain positions, and by rearing-up like a horse.[17]

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[14] Rue, p. 508. [15] Rue, p. 509. [16] Rue, p. 510.

The caribou is capable of speeds in excess of thirty miles per hour, but since this animal does not have oversized lungs like the moose, he quickly tires. This animal can jump as high as four-and-a-half feet due to his light, powerful body. Caribou are also considered the fastest swimming big game animals on the North American continent. Like the moose, they are kept bouyant by their air-filled hair.[18]

The caribou is more of a social animal than the moose, traveling in herds of from two hundred to fifty thousand.[19]

In preparation for mating the bulls feed heavily all summer, growing as much as three inches of fat under their hide. At the onset of mating season in October the males are fat, have a new coat and antlers. The large bulls soon capture a harem of as many as 15 to 20 females and fighting begins with tremendous crashing charges which sometimes mean locked antlers and death. During the six-week mating season the bulls rarely eat and by the end they are worn out and haggard--taking until December or January, when they drop their battered antlers, to regain their normal appearance.

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[17] Rue, p. 511. [18] Rue, p. 512. [19] Rue, p. 512.

The mother carries her young for about eight months--giving birth usually to one calf between May 15 and June 15.[20] The caribou calf, like the moose calf, is able to walk in a few hours and outrun a man in a few days. Cows and calves are very devoted to each other.

The average life of a caribou is ten to twelve years with the elderly usually being killed by predators.[21]

The best sign of caribou is the deep rutted paths formed as a herd migrates through an area. The tracks are quite different and easy to tell from the moose because the hoofs form a rough circle followed by the marks of large dew claws.

The wolf is both the main enemy of the caribou and its major friend. The Eskimo says, "The wolf keeps the caribou strong" since a healthy wolf cannot catch a healthy caribou. The wolf weeds out and kills only the old, sick, crippled or young caribou which keeps the herd strong by eliminating the misfits. A caribou in good health is a fearless animal, known to tease wolves into attacking, then outrunning them. The newborn calf is usually the only caribou that a bear, lynx or wolverine is able to bring down.

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[20] Rue, p. 514. [21] Rue, p. 514.

The caribou is more prone to diseases than the moose. His greatest problem is from insects which continue to infect the caribou all his life.[22]

This is the most important animal to the Alaskan natives, many of whom are completely dependent on it for existence. It provides food for humans and dogs, and hides for clothing and tents. Every part of the animal is used, including the contents of its stomach which is eaten as a salad. The caribou migration route is uncertain from year to year and cannot be predicted. When there is a change in the migration route, a native village can suffer dreadfully. In the past entire villages have died out from lack of such food.[23]

At the turn of the century these animals numbered about one million, with the population today at less than one-half million.[24] There are three forms in Alaska: (1) The Stone caribou found in central Alaska is large and dark with a whitish fringed neck and well developed antlers; (2) The Grant lives along the Alaska Peninsula and is the smallest; and (3) The Osborn which is the largest, is found near the upper Tanana and upper Yukon rivers.

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[22] Rue, p. 517. [23] Rue, p. 517.

[24] Dufresne, p. 32

The domesticated caribou, or reindeer, was introduced into Alaska from Siberia at the turn of the century as a new means of livelihood for the Eskimo. The reindeer has intermixed with the caribou causing the caribou's decline by destroying its grazing grounds.[25]

## Musk Ox

The musk ox, or "Oomingmuk" as the Eskimo calls him, is one of the most rare and interesting animals in the history and wildlife of Alaska. This odd looking Arctic mammal is now found on Nunivak Island in the Bering Sea, where it was transplanted in 1934 from Greenland by way of Fairbanks. The Ice Age animal was once native to Alaska's Arctic Slope, but had been killed off by Eskimo and white explorers by 1865.[26]

The musk ox is a stockily-built, hairy animal with a bewhiskered cow face, and the horns of an African water buffalo. The bull stands only three-and-a-half feet high at the shoulders, yet weighs as much as nine hundred pounds.[27] Their outer hair is 18 to 20 inches long and protects them from the cold winter. A brownish-black color blends into the surrounding environment. They feed on willows, lichens, and other plant life.

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[25] Rue, p. 518; see also Murie, pp. 265-295.

[26] Dufresne, p. 46.

The bulls and older cows, when threatened by an enemy, form a tight circle with heads out, the mother, calves, and yearlings protected in the center. The male will paw the ground and bellow; but he will not attack, hoping that their circle of defense will dissuade any animal predator. But this community protection, led to their extinction by humans because it left them an easy target for armed white men and Eskimos.[28]

This unusual animal is an excellent example of ecological adaptation. The short rounded hoof allows it to travel with ease on the hard snow, so it can reach plants. Its nose is tough and durable, being used to break out winter vegetation from its icy bed. The long-haired coat and fat body keeps it warm in Arctic winter.

## Bison

The bison or buffalo we know today did not exist in Alaska before 1928. During that year twenty-three animals were transplanted from Montana and released at Big Delta, Alaska. In spite of natural enemies such as wolves and bear, and the extreme cold, they have flourished and multiplied. The herd now covers an area starting at Big Delta south through the Copper River Valley. Limited numbers of bison are hunted each year in order to keep their number in balance with the environment that supports them.

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[27] Dufresne, p. 46.

[28] Dufresne, pp. 46-47.

Actually, the bison is considered a form of range cattle, the way of life being similar to cattle. The bull averages eleven-and-a-half feet in length, six feet in height, and holds weight records of three thousand pounds, with cows weighing up to nine hundred pounds.[29] The bison color is from brown to black. It does not lose its horns each year but keeps the same set for a lifetime. The herding instinct of the bison, like the musk ox, has protected it from natural predators such as the wolf but has, unfortunately, made it all the easier a target for man.

The bison feeds on grass using its large hoofs to clear away the snow in winter. This animal is without highly developed senses. The bison, like the moose, has an over-sized heart and lungs, permitting it to run from 32-to-35 miles per hour without tiring.[30] The bison breed in August and early September with much bellowing and fighting among the males. The victorious bulls have harems ranging from 10 to 70 cows.[31] Single calves, usually born in May, join the herd in a few days.[32]

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[29] Dufresne, p. 49; see also Rue, p. 536.

The average life span of the bison is 25 years. But one tagged cow is reported to have reached 40. The tracks and scat of this creature are the same as range cattle.[33] The bison, like all the animals in this section, is classified as a ruminant.

## Sitka Deer

Neither the moose nor the caribou inhabit Southeastern Alaska islands, nor the islands of Prince William Sound and the Kodiak-Afognak islands. The only member of the deer family found in these locations is the Sitka blacktail deer, who is a close relative of the mule deer that resides in the lower western states. It bears the same scientific name "Odocoileus Hemionus". The difference is in location and in size, the blacktail being smaller, for it only stands about 38 inches high at the shoulder with a length of about five feet and an average weight of 150 pounds.[34]

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[30] Rue, p. 541. [31] Rue, p. 541.

[32] Rue, p. 542. [33] Rue, p. 543.

The Sitka deer's summer coat is reddish-brown with the undercoat being grayish brown, and, like the moose and caribou, it has air-filled hair which makes it a good swimmer.[35] The head of this deer is made up of a black muzzle, black skull cap, white face, gray cheeks and black-rimmed white ears. The stomach and insides of the legs are whitish. The tail, as the name states, is black on top and white underneath. It has four toes on each foot, two of which are dew claws located above and behind the foot.

These deer have four pairs of glands located on the outside of their body. There is a lachrymal gland below each eye that expands when the hair on it is excited.[36] Metatarsal glands are on the outside of each hind leg and tarsal glands are found on the inside of both hind leg heels. These are considered the most active glands, giving off a pungent odor that attracts the attention of a possible mate. The interdigital glands are located between the hoofs. They yield a yellow waxy fluid which the deer use for tracking one another.[37] As will the moose and caribou, the Sitka blacktail deer is a ruminant.

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[34] Rue, p. 469. [35] Rue, p. 470.

[36] Rue, p. 470. [37] Rue, p. 473.

Being restrained by island boundaries, this deer does not migrate. The males, like the moose and caribou, travel together, keeping to themselves. They can be found feeding early and late each day in the summer to avoid the heat. The deer bed down at night in the open, but during the day stay close to cover. Their favorite foods are the huckleberry bush, ground dogwood, fine meadow grasses, skunk cabbage and cedar. Kelp and other marine vegetation will be eaten if heavy snows cover favorite foods.

The hearing, sight, and smell are keen. These animals communicate by stamping their feet, by discharging their glands, or by a hasty movement which will signal other deer of danger.[38] Snorting and grunting sounds are made through the nose. The males call with a deep, raspy, blatting sound like that of a sheep. The does and fawns make the same sound as the males but theirs is much higher pitched.

The deer walk when possible but can run as fast as 35 miles per hour and make jumps 25 feet long and eight feet high.[39]

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[38] Rue, p. 475. [39] Rue, p. 472.

The male deer may acquire a small harem of three or four. But, since there are generally fewer bucks than does he seldom has to fight for them.[40] If not mated, the breeding period of a doe can last from about November first to as late as April.[41] The doe carries her young for about 210 days, giving birth in June or July. Like the moose, the first birth is usually single and thereafter twins are born.[42] The fawn is weak and wobbly and takes longer than the moose or caribou calf to develop its running legs, sometimes up to two weeks. Up to that time it protects itself by staying hidden.

The blacktails' life span is approximately ten years, being able to breed at one-and-a-half years. Its most common sign is a track which is about three to three-and-a-quarter inches long with a stride of 22 to 24 inches.[43]

Having studied this beautiful and timid mammal, it can be seen that the wolf is the major enemy of the deer. It is believed that this animal kills about one deer per week to survive. Sitka deer will often swim five to six miles to a neighboring island to escape the wolf.

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[40] Rue, p. 472. [41] Rue, p. 478.

[42] Rue, p. 479. [43] Rue, p. 481.

The deer population of Prince of Wales Island, once quite large, is but a fraction now due to the great increase in wolf population and their resulting kill. The approximate deer population is 60,000.[44]

Wapiti

Eight Roosevelt wapiti, or American elk, were transplanted to Afognak via Kodiak Island in 1928 from the Olympic mountains in Washington. The herd is now over 300 in size.[45] The wapiti are second only to the moose in size as a member of the deer family. A grown bull elk will weigh between 700 and 1,000 pounds and stand as high as five feet.[46] The antlers of the bull elk are prized above all others of the deer family. The wapiti are colored chestnut brown on head and neck and grayish brown on the sides. They are distinctive in having a mane and a whitish rump.

The elk, unlike the moose, caribou, and deer are a herd animal and will defend each other if necessary.[47] They are usually led by an old female. Grasses make up the majority of their food. The wapiti are ruminants and have a keen sense of smell.[48] The bulls and cows communicate by bugling during the mating season but rarely make a sound the rest of the year. The cows usually squeal when alarmed and the calves bleat. Elk can run 35 to 40 miles per hour and maintain a trotting gait of about 28 miles per hour.[49]

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[44] Dufresne, p. 36. [45] Dufresne, p. 38.

[46] Dufresne, p. 37. [47] Rue, p. 427.

The elk usually mate in September and October, giving birth in May or June usually to a single calf.[50] The average life span is 15 years. Their most common sign is their track which looks very similar to a domestic cow track.

Dall Sheep

Dall sheep are found from the Kenai Peninsula north to the Brooks Range and east at the headwaters of the Yukon and Tanana Rivers. Their population in Alaska is over 30,000.[51]

The weight of the Dall sheep is 175 to 225 pounds. Beautiful curled horns of the ram (prized by hunters the world over) may be 50 inches in length. The sheep stands about 38 inches and is six feet long.[52] The Dall in Alaska is almost pure white with some black hairs.

These animals have four toes on each foot with the

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[48] Rue, p, 428. [49] Rue, p. 430. [50] Rue, p. 433.
[51] Dufresne, p. 41. [52] Rue, p. 566.

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front two being hoofs and the back two being dew claws. The stomach is four-chambered and the cud is rechewed. Their hair is air-filled and covered with a natural lanolin which makes a good raincoat. The sheep shed their coat in June leaving a light coat for summer.

The Dall sheep is a vegetarian. It prefers the sweet grasses on the high mountain meadows. As other mountain sheep, the Dall does not migrate and during the winter months the entire herd stays together. In spring they split up with the rams (males) in one herd and the ewes(mothers) and lambs (young) in another. In each herd usually the oldest is the leader.[53]

The keenest sense of the Dall sheep is their eyesight which has been compared to eight-power binoculars.[54] In addition to its remarkable eyesight it has a good sense of smell and good hearing. This animal is considered one of the smartest of game animals.

The adult makes few noises for communication. The young make the usual bleating noise common to all lambs. The sheep rarely run and when they are forced to, they soon become winded.[55]

Dall usually breed in November with the males trying to obtain as big a harem (usually three to four) as their fighting ability will allow. The rams battle for a ewe's favor by running at each other full speed, crashing head on with a force approximating one ton. Aside from headaches little damage is received and the weaker of the two usually goes away exhausted.

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[53] Rue, p. 569. [54] Rue, p. 566. [55] Rue, p. 571.

The ewe carries her young for six months, giving birth in late May usually to a single lamb. For protection the mother tries to find the most inaccessible ledge or cliff on which to give birth. The new lamb is pure white, weighs about eight pounds and stands about ten inches high. It is standing within one or two hours and usually joins the herd with its mother in three or four days.[56]

Dall sheep live as long as fifteen years with an average life span of twelve years. The tracks of the Dall are similar to blacktail deer which are usually not found in the same area. Due to the rocky terrain the goats pellet-like scat (droppings) is easier to find than its track, and in the late spring the shreds of white hair left from shedding can be found.

The wolf is the worst enemy of the Dall and it restricts the sheep's feeding habits. Other enemies are the wolverine, lynx, coyote, and grizzly bear. Its only defense is its ability to run up and along the steep mountain sides.

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[56] Rue, p. 573.

The golden eagle is always found in sheep country and is considered an enemy of the sheep since it will attack the lambs. However, the most serious danger to the sheep is a winter of heavy snow which makes it difficult for them to obtain their food, forcing them to lower elevations where they become fair game for their enemies while hunting for plants under the snow.

## Alaska Mountain Goat

The mountain goat is found in Southeastern Alaska and Southcentral Alaska from Dixon Entrance to the Kenai Peninsula. It has no other relative on this continent and is actually not a goat but a member of the "Old World" antelope family. Scientists think this animal migrated to this continent over the Bering land bridge some 600,000 years ago.[57]

The goat stands 36 to 46 inches high at the shoulder and measures about five to six feet long with long white, oil-covered hair and black hoofs, eyes, horns, and nose. The weight of a grown male is between 200 and

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[57] Rue, p. 577.

300 pounds.[58] Both sexes have almost straight horns with the billy goat's being no larger than twelve inches and the nanny's nine.[59] Behind each horn is a gland that produces a strong odor and announces the goat's presence to others of its kind. The male uses his horns principally for fighting, while the female utilizes hers for protection of her young.

The goats have a beard which continues to grow even when shedding their winter coats. They are ruminants. The goats, like sheep, travel from winter to summer ranges which are usually no more than 15 to 20 miles apart.[60]

During the summer months the males usually leave the females and keep to the highest peaks.[61] They feed on grasses in summer and on bushes in winter. Their senses, like the Dall sheep, are very sharp and they usually make the same type of bleating (mother and young) or grunting (male) sounds.

The goat's ability to move among the rocks and cliffs is superior. He chooses each step with great care even when in danger and has an exceptional sense of balance. His knife-edged hoof has a suction pad which allows him to cling to slippery rocks.

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[58] Dufresne, p. 44. [59] Rue, p. 576.

[60] Rue, p. 582. [61] Rue, p. 583.

The breeding habits and carrying time for the young (gestation period) are the same as the Dall sheep: November for breeding, and six months gestation. There is little fighting between males and when there is, the horns are used as daggers.[62] The kid (usually just one is born) is much more precocious than the Dall lamb and in three or four hours can follow its mother.[63]

The life span of the mountain goat is 15 years.[64] Its tracks are different than any other animal in that they are square. The bell-shaped scat are a more common sign since the goats usually walk on rocks. Clumps of hair left on bushes and trees are also good signs.

One of the mountain goats' most dangerous enemies is the mountain avalanche, which kills more goats than any predator.[65] The only animal capable of getting near a goat is the golden eagle which preys on the kids by pushing them off cliffs. When snow and winter weather forces the goats off the peaks, they become prey of the wolf, coyote, and wolverine.

It is of interest to note that the long hair of the mountain goat was used by the Chilkat and Tlingit Indians for weaving their ceremonial robes.

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[62] Rue, p. 586. [63] Rue, p. 587.

[64] Rue, p. 588. [65] Dufresne, p. 44.

## Summary

All of the animals in this section of Alaskan wildlife could be classified as vegetarian, hoofed, ruminants. They are presented first because they are the animals most responsible for the sustenance (feeding) of man in Alaska. These animals along with fish and some birds, are the "eating" animals of Alaska as well as the department stores of the Alaskan native and white man. The hides are made into tents and clothing and the sinew into thread.

## EXERCISES

1. List as many things as you can that the Alaska native obtains from the caribou or moose.
2. List the superior senses of each animal and describe how you would stalk them.
3. A goat's age can be determined by the growth rings on its horns. The next time you see a mounted goat head count the rings and add one-and-a-half years.
4. The ambitious older student living in the bush and trained in the outdoors might want to try and find an occupied home of a living mammal and observe the life there. Try to track a wolf to its den, a moose to its "yard", or a squirrel to its hollow, and keep a careful notebook on what you see.

## REVIEW QUESTIONS

Tear out this page and look for the answers as you reread the material.

1. The Alaskan moose is the largest ________ in the world.
2. A moose can weigh as much as ________ and can be ________ in height and ________ in length.
3. The two hind toes of a moose (and of caribou, deer, musk ox, and bison) are called ________ ________.
4. The hair of a moose is filled with ________ ________.
5. A moose likes best to eat ________.
6. In stalking a moose you will want to be out of his sense of ________ and of ________ which are very keen.
7. Moose are strong and fast runners because they have ________.
8. What part of the year is the rutting, or mating, season for moose?
9. What does gestation mean?
10. When and why can a cow moose be considered dangerous?
11. The ________ and ________ are the moose's most dangerous enemies.
12. List the different ways the moose can be used by man.
13. Near which city would you find caribou: Juneau, Anchorage, or Fairbanks?

14. The caribou are the only deer that have ________ on both male and female.

15. A caribou can stand up to ________ feet and weigh up to ________ pounds.

16. What is so important about a caribou's hoofs?

17. The caribou is considered the most ________ of all animals.

18. The ________ is the caribou's favorite food.

19. The caribou is believed to be the fastest ________ of big game animals.

20. The best sign of caribou is ________.

21. What does the Eskimo mean, "The wolf keeps the caribou strong."?

22. Why is the caribou so important to the Alaskan native?

23. A domesticated caribou is called a ________.

24. Oomingmuk is the Eskimo name for ________.

25. Where is the musk ox found in Alaska?

26. Why is the musk ox a good example of ecological adaptation?

27. How long has the bison been in Alaska?

28. The bison is actually a form of ________.

29. The only member of the deer family found in Southeastern Alaska is called the ________ ________ ________.

30. The Sitka deer is how long and how high?

31. What senses of the Sitka deer are well developed?

32. Why is the wolf the worst enemy of the Sitka deer?

33. The wapiti are found on what island in Alaska?

34. What is the main difference between the wapiti and the other deer family members?

35. You would find the Dall sheep in: Southeastern Alaska, Southcentral Alaska, the Interior, or the Aleutians?

36. Why does the Dall sheep's hair make a good raincoat?

37. What does a Dall sheep like to eat?

38. The keenest sense of the Dall sheep is ________, and it is compared to ________.

39. Why is deep snow the most serious danger to Dall sheep?

40. Where would you find the mountain goat in Alaska?

41. What is so important about a mountain goat's hoofs?

42. What is the mountain goat's most dangerous enemy?

43. What has the long hair of the mountain goat been used for?

44. All the animals in this section are classified as: 1. ________; 2. ________; 3. ________.

45. These animals are important to Alaskans because ________.

## NOTES FOR TEACHERS

As the student studies this chapter, or any other chapter, provide him with duplicated outline maps of Alaska. Have him locate the range of each animal discussed. Have him look for similarities of environmental adaptations among those animals that inhabit the same general region. Also have him discover contrasts between similar animals that inhabit different regions, i.e., the Southeastern Sitka deer and the Interior caribou.

For each hoofed animal studied have the student list those characteristics that enable the animal to survive in its environment.

A most important objective is the student's appreciation for the value of the hoofed animals to rural Alaskans. Have each student seek out and find as many ways as possible that the hoofed animals are used in his community.

Discuss the place of the hoofed animals in the "chain of life." Why are they called consumers and why is it important to have secondary consumers or predators feed on them?

The musk ox is an example of special ecological balance. After reading about the musk ox and after reading the introduction on ecology the student should be able to state what this balance is and why, if left unprotected, it will become extinct again in Alaska as it did 100 years ago.

After reading about the bison and wapiti can the student tell why these animals represent a very important conservation concept in view of the feared extinction of wildlife in the lower "48" due to population growth?

After studying this unit on wildlife, can the student give the reasons why large wilderness areas in Alaska must be preserved? More specifically, why must these areas be in Alaska?

## Chapter 5

## BEARS

The next group of mammals are the flesh-eating (carnivorous) predators which have provided food and hides for man in Alaska but are considerably less popular. These animals are best known as predators because they prey on the moose, caribou, sheep, and deer. The most famous of these would be the wolf and bear. The wolf has been placed in a bad light over past years but naturalists are now finding that the wolf and other predators are important in maintaining the ecological balance of nature. The predators thin out animal herds too populated for a local area and, in doing so, generally the weak, sick, and aged only are killed.

Bears, found in every part of Alaska, are probably the most exciting and fearsome animal described in Alaska's literature, native mythology, and sourdough tales. One of the most interesting areas for Alaskan bear is Admiralty Island in Southeastern Alaska which has approximately 1,600 bears in its 1,600 square miles. There are four grizzly and one brown bear subspecies found only on this island.[1]

The Alaskan grizzly is found generally in the mountains of Interior Alaska. It is smaller than the brown bear and lighter in color. The brown bear is found along the southeastern and southcentral coastal rivers and out to the Alaska Peninsula.

The brown bear and grizzly bear are considered of the same species called "Ursus Arctos". Their main difference is in the location of their habitats.[2] There are over 20,000 brown and grizzly bears in Alaska.[3]

## Brown Bear

The brown bear stands four-and-a-half feet at its shoulders and weighs up to 1,800 pounds. Its length averages eight to nine feet and when standing erect, it can stretch to reach as high as eleven feet. The claws on the front paws are four inches or longer. The hair of the brown bear ranges from blond to black. They eat both flesh and plants and have 42 teeth adapted to both types of eating.[4] They have long, curved canine teeth used for tearing flesh and flat-topped-molars for grinding vegetation.

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[1] Frank Dufresne, Alaska's Animals and Fishes, (Portland: Binfords & Mort, 1955), p. 51.

[2] Leonard Lee Rue III, Sportsman's Guide to Game Animals, (New York: Harper & Row, 1969), p. 39.

[3] Dufresne, p. 54.

The brown bear does not migrate but instead travels extensively and continually within a certain area looking for food. He will come out of his winter den in late April or early May and feed his starving body on sprouts and roots and the remains of dead animals. During the first part of the summer the brown bear feeds on grass. During late summer the salmon start to run and provide the bear with the major part of his diet. At the end of the salmon run the bears will return to the mountains to feed on ripening berries.

In October the bears are fat and are seeking their winter den from the past year or making a new one. The den is usually on the northern side of the mountain at 1,000 to 2,000 feet elevation.[5] When a good site is found the bear uses his strong paws and starts to dig. Like all bears, he does not hibernate but can be easily awakened from his sleep. Thus, it is not unusual to see him out in the middle of winter. Before beginning his period of winter sleep, a brown bear will have gained as much as

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[4] Rue, p. 40. [5] Rue, p. 44.

400 pounds since the previous spring and his body will be fed by this stored fat during the winter.[6]

This animal's ability to smell is its sharpest sense, for both its eyesight and hearing are poor. It communicates by roaring and growling. Usually the bear walks in a shuffling gait but if necessary can run as fast as 30 miles per hour.[7]

The brown bear has a leadership hierarchy based on strength and courage. The strongest is boss of a group of bears and assistant bosses are in order of strength under him.[8] Their only natural enemies are others of their kind.

They mate in June and the first part of July, with individual females breeding every other year. One to four young are born in January or February. The cubs weigh one-and-a-half pounds each. The greatest danger to a cub out of the den is a boar (male) bear which would kill it immediately if given the chance. The average age of Alaskan brown bears is 15 to 20 years with a possible life span of 35 years.[9]

Looking for signs of this great bear, or any bear, can be exciting. Their track is easy to see due to their great weight. Bear trails, which are approximately 20 inches wide and eight to ten inches deep, can be found almost anywhere in bear country. A most common sign of bear is its smell, which is very pungent and strong and carries for hundreds of feet.

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[6] Rue, p. 45. [7] Rue, p. 46.

[8] Rue, p. 44. [9] Rue, p. 47.

All species of Alaskan bears are infected with a muscle worm called trichina which is also found in pork; therefore, bear meat should be thoroughly cooked before eating.

## Alaskan Grizzly Bear

The Alaskan grizzly bear has many of the same characteristics as the brown bear, although it is found mainly in the interior of Alaska, north of the Southcentral and south of the Arctic Slope areas. The grizzly bear, although somewhat smaller than the brown, is considered the most dangerous, vicious, and unpredictable of all land mammals.[10]

The grizzly, like the brown bear, does not migrate and also has similar feeding habits since he enjoys meals of plants and grass in the spring and early summer, salmon during late summer, and berries in the fall. As with the brown bear, the grizzly will kill and eat what animals it can whether it be a marmot, mouse, or baby caribou. It will also feed on any remains of dead animals.

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[10] Rue, p. 53.

The grizzly weighs up to 800 pounds, stands three-and-a-half feet at the shoulder and is up to seven-and-a-half feet long.[11] He has a very keen sense of smell and good hearing but his eyesight is poor.[12]

A good sign of any bear, except the polar bear, is the "bear tree" which is used by bears to scratch themselves. This tree is usually just a stump about seven to eight feet tall with all the bark rubbed off and the undersurface worn smooth.

The grizzly breeds from late May through June. A mated bear couple will customarily spend a major portion of, if not the whole mating season together. They carry their young until January, giving birth in the winter den to young of the same size and number as the brown bear.

Their life span averages 15 to 20 years, which is similar to that of the brown bear. As with the browns, the grizzly has no natural enemies. It has been historically the most feared animal by Indian and white in the American and Canadian west.[13]

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[11] Rue, p. 53.

[12] Rue, p. 61.

Black Bears

There are over 75,000 black bears in Alaska.[14] They are found everywhere there is spruce tree growth. Similar to the brown bears which are sometimes black in color, the black bears are not always black, some being brown. The four forms of black bears found in Alaska are as follows.[15]

1. The American Black Bear distributed throughout Alaska is colored all black or cinnamon brown with a diamond-shaped white fur patch on the breast.
2. The Kenai Black Bear is the largest of Alaskan black bears.
3. The Dall Island Black Bear is all black and found in Southeastern Alaska.
4. The Glacier Bear is the oddest and most unusual of Alaskan bears and is found only near the coastal glaciers between Lynn Canal

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[13] Adolph Murie, A Naturalist In Alaska, (New York: Anchor Books, 1963), pp. 27-101. This material which covers Murie's study of the grizzly bear in McKinley Park is good reading for the Junior High student or older.

[14] Dufresne, p. 61.

[15] Rue, p. 21.

and Cape St. Elias. Some of these bears are maltese or blue-gray in-color, some have a brownish tint, and some are all black.

The black bear is the smallest of the bear family, averaging 300 to 400 pounds, 27 to 36 inches high, and four to five-and-a-half feet in length.[16] Like the other bears it is not migratory and its range is usually confined to five to fifteen square miles.[17]

It is the one bear found that seems to thrive on man's presence and does not hesitate to take a handout or raid a garbage can. These bears are considered the clowns of the woods and are the least dangerous of bears, but they still are capable of brutally attacking a human when cornered or when their cubs are threatened with harm. This group of bears is very capable of climbing trees and they are very powerful swimmers.

The black bears also feed on grasses and plants in spring and early summer, salmon in late summer and berries in the fall. Like their bigger brothers, they willingly eat flesh but since they are considerably smaller they are usually content with rodents and an occasional deer fawn or moose calf.

The black bears habits are the same as the brown and grizzly bear. However, the cubs at birth are only about half the size. The cubs of all bear groups are highly protected the first year by their mothers.

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[16] Rue, p. 21. [17] Rue, p. 22.

Black bears live about fifteen years with one record 27 years old.[18] The most common sign of the black bear is its tracks. In black bear country damage to trees is readily noticed.

The black bears are their own worst enemy killing each other during mating and over food. Wolves have been known to kill black bears as well as the larger grizzly.

## Polar Bears

The polar bear is undoubtedly the most picturesque animal of Alaska. It is found all along the Arctic Coast and down the Bering Coast to St. Mathews Island.[19] The Eskimos call the polar bear "Nanook".

The polar bear is second in size only to the Peninsula Giant Brown and Kodiak Brown. Its average weight is 1,000 pounds arranged to form a small streamlined head, neck, front legs, and shoulder with large hindquarters.[20] There have been reports, not verified, of polar bears weighing 1,800 pounds. If this should be proven, it would make the polar bear the largest carnivore in the world.[21]

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[18] Rue, p. 32. [19] Dufresne, p. 65.

[20] Dufresne, p. 67.

Polar bear hair is naturally pure white but becomes stained with yellow during the spring and summer. This bear is capable of swimming for miles into open ocean using its front legs for paddles and its hind legs as rudders. It is so fast it can catch seals, which are its favorite food.[22]

The animal is adapted to its environment not only with its pearlike body for swimming but also by having short stiff hairs on its feet for protection and traction, and short sharp claws for gripping the ice. He travels constantly and always alone except for a female with cubs or during the mating season.

Polar bears are the most unpredictable of all bears. They are quite capable of stalking a man when hungry. They have a keen sense of smell and are able to smell a whale carcass for over twenty miles. However, their sight and hearing are considered quite poor.

The male does not hibernate nor sleep any extended period. He is active year around. The female does sleep for an extended period of time (November through April) in a protected den where she has her babies.[23] The cubs, born in late December or early January, are almost always twins weighing between one and two pounds.[24] They stay in the igloo-like snow den until late April when they are sufficiently developed to face the Arctic weather. The females are considered the most devoted of any wild animal mothers in their constant protection and patient teaching of their cubs.[25]

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[21] Rue, p. 69.

[22] Dufresne, p. 67.

The average life span of this creature is 30 years with the record being 41 years.[26] The only sign that one is likely to see is the track. Arctic foxes in an area may indicate the presence of polar bears since the foxes feed on remains of the bear's kill. Other than man, the only natural enemy of the polar bear is the killer whale which can capture the bear as it swims from one ice floe to another.

The polar bear population is believed to be around 3,000.[27] In recent years the white hunter, his guide, and aircraft have done much to reduce the number. In view of this the Boone and Crockett Club has refused to accept any polar bear killed after being located by a plane, and the State of Alaska limits by license the number that can be killed.[28]

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[23] Dufresne, p. 66.

[24] Rue, p. 77.

[25] Dufresne, p. 66.

[26] Rue, p. 78.

[27] Dufresne, p. 68.

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[28] Rue, p. 79; see also Roger Caras, *Monarch of Deadman Bay*, (Boston: Little, Brown and Company, 1969). A highly recommended enjoyable and exciting book for the Junior High student and adult. This book is an account of the life from birth to death of an enormous man-killing brown bear. Not only is it exciting, it is also one of the most informative books on the brown bear and its way of life.

## EXERCISES

1. If you live in a native Alaskan village, find out what role the bear plays in the stories and beliefs of the native people.
2. If you live in an Alaskan population center, go to a local museum and examine the stuffed bears. Some particularly large animals can be seen at Jonas Brothers in Anchorage and at the University of Alaska museum in College, Alaska.

## REVIEW QUESTIONS

Tear out this page and answer the questions as you reread the chapter.

1. A carnivore is what kind of animal?
2. The main difference between the grizzly bear and the brown bear is location. Where would you find them in Alaska?
3. The brown bear averages ________ pounds, and has an average length of ________.
4. The color of the brown bear ranges from ________ to ________.
5. The brown bear has how many teeth? What does he use his teeth for?
6. The brown bear eats what foods, and at what time of year?
7. Where would you most likely find a brown bear's den?
8. Do bears hibernate?
9. What is the sharpest sense of the brown bear?
10. Why must bear meat be cooked thoroughly?
11. The brown bear and grizzly bear have no natural enemies except for ________.
12. Black bears are found wherever there is ________ growth.
13. What size is the black bear? Weight? Length?

14. Where is the polar bear found?

15. What is the polar bear called by the Eskimos?

16. Average weight of the polar bear is ________.

17. What is the favorite food of the polar bear?

18. How is the polar bear adapted to his environment?

19. Why is the polar bear important to the Arctic fox?

20. What is the natural enemy of the polar bear?

## NOTES FOR TEACHERS

Bears are the most written about and feared predators not only in Alaska but throughout the North American continent. There is good reason for this because bears are naturally dangerous to man, particularly when man is careless of his own safety in bear territory.

Several Alaskans are killed or maimed every year by bears. This is the most important reason for Alaskan students to study the bear. They not only learn to appreciate him as a predator but to respect and understand him for their own safety.

The student should learn, preferably in the field, the most basic bear signs, i.e., tracks, bear tree, odor, hair, and trail. He should be instructed on how to react when confronting a bear, i.e., never turn your back or run from a bear unless protection is very close because a bear is very fast. If attacked by a bear, an individual should "play" dead, face down with his head covered by his arms.

The basic rule in bear country is to be well-armed and make noise. Beliefs that a bear will not attack a woman, or that black bears are safe, are erroneous.

In the lower "48" there are approximately 800 grizzly bears left and Alaska is the only remaining home of the grizzly and brown bear. After studying this chapter the student should be able to discuss why bears should be preserved because of their ecological role as secondary consumers and, of course, because they are a unique form of life.

Another concept to be understood by the student is why the difference in ecosystems creates the only differences between the brown bear and the grizzly bear--their size and location. The brown bear is larger than the grizzly because he lives in an ecosystem of abundant food, particularly the migrating salmon. The grizzly of the Interior must work or fight for every bite he gets. He must dig up rodents by the hundreds, search for carrion, or bring down an old or sick moose or caribou.

Can the student generalize why it is ecologically just as bad for the black bear population to grow unnaturally because it thrives on man's presence, as it is for the grizzly to be threatened with extinction from man's presence?

Can the student connect the dumping of oil ballast in Cook Inlet with the fate of the Peninsula brown bear?, i.e., oil kills salmon which migrate up Peninsula streams and are the main part of the brown bear's diet.

## Chapter 6

# FUR BEARING ANIMALS

Fur bearing animals are the most historical and history determining animals in Alaska. The fur seal changed pre-historical native Alaska, to historical Russian Alaska. Certain forms of wildlife and tribes of natives became almost extinct from wanton slaughter. Even today the State of Alaska has not regained the ecological whole it had before that fateful eighth day of September, 1740. It was on this date that Vitus Bering and four boatloads of free-shooting trappers called "Promyshlenyiki" left Siberia for the New World.

The upper classes and nobility in Russia and Europe were demanding more and more furs and paying more and more for them. This demand was answered when the Russian "Promyshlenyiki" discovered a strange water animal in the land of the Pacific Aleuts. They called this animal "old man of the sea" or sea otter. The sea otter had the richest fur they had ever seen.[1] The great and tragic importance of this discovery is summed up by the historian Bancroft who says of the Russian explorers:

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[1] Frank Dufresne, Alaska's Animals and Fishes, (Portland: Binfords & Mort, 1955), p. 71.

"Little would have been heard from them for a long time, if ever, had it not been for the beautiful furs brought back."[2]

The greed for these furs financed ships and companies and created the bloodiest chapter of Alaskan history. The Promyshlenyiki enslaved the Aleut people and at times slaughtered whole villages. Before 1740 there were an estimated 15,000 pure-blooded Aleuts and today there are less than 1,000. Anything and everything was tried by the Russians to obtain more furs, whether it be taxation, tributes, or hostages.

The greatest tragedy to Alaskan wildlife came with the Russian discovery of the Pribilofs in 1786, when the islands were covered with several million fur seals, sea otter, and walrus. Within ten years the sea otter and walrus were wiped out of the area and fur seals were almost extinct. Between 1784 and 1867 approximately $450,000,000 in furs, at todays value, were shipped to Russia.[3]

With the decline of the fur trade in the early and mid-1800's, the Russians lost their interest in Alaska. The territory was sold to the Americans in 1867 for $7,200,000, or two cents per acre.[4]

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[2] Hubert Howe Bancroft, cited by Dufresne, p. 72.

[3] Dufresne, p. 73.

Around 1900 fur trappers discovered rich gold fields in Alaska and furs provided grubstakes for the prospectors. Today furs still help support many native families, unemployed loggers, and homesteaders during the long winter months. Many furs are not sold but are used to make parkas, mukluks, mittens, socks, hats, and trousers so necessary for survival in the Arctic.

Fortunately, during the last fifty years, government enforcement and wildlife management has helped to bring back the Pribilof fur seal, sea otters, walrus, and other fur bearing animals to the rest of Alaska.

## Beaver

The most important fur bearing Alaskan mammal is the beaver, a member of the rodent family. Not only does the beaver provide beautiful pelts for trappers, it is more responsible for keeping the ecological balance of Alaskan wildlife than any other animal.

Beavers build dams which form ponds where their homes can be built safe from predators. They also create a life zone where moose feed, waterfowl raise their young, and fishes lay eggs. The pond provides homes for mink, muskrats, and land otters. For animals and man in general, the beaver pond is an invaluable means of flood control.

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[4] Dufresne, p. 74.

The salmon is a good example of how various forms of life depend on the industrious, peaceful beaver. Salmon prefer beaver ponds and beaver-controlled waterways in which to lay and fertilize their eggs. Without a widespread beaver population the yearly Alaskan salmon catch could be severely limited. Natives and their dogs would go hungry. Commercial fishermen and canneries would not stay in business. The sportsman would not enjoy the greatest thrill of all--landing a giant king salmon.

Dufresne compares the beaver to

> a humble, hardworking primitive race of people. Asking only to be let alone to manage their own affairs in their own way, they go busily about their efforts for the good of the community. They form villages by constructing lodges of mud, reinforced with branches, they build dams to maintain desired water levels; they log trees from the forest, cut them into suitable lengths and ferry them through artificial canals. In summer time when food is abundant they store large quantities against the long winter season. With all they dwell together with such harmony as should be the envy of mankind.[5]

The beaver is one of the few mammals that does not intentionally harm any other animal whether it be for food, for mate, or out of anger. This noble and peaceful animal is found from Southeastern Alaska north to the Kobuk River. An adult beaver weighs between thirty and seventy pounds, which makes him the largest of the rodents. He has short legs and webbed hind feet. His flat tail is used for balance, steering, propulsion, and for warning other beavers of danger by a smack on the water. The front incisor teeth are like long sharp chisels and are used to cut trees and branches.

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[5] Dufresne, pp. 111-112.

The beaver's coat is unusual in that it has two layers. The first layer is a soft underfur which is covered by a second layer of coarse long hair. It is chestnut brown to straw color.

Beavers remain with only one mate for life. The mating season is in March, and in early June two to five fully furred kitts are born, soon to join their parents swimming in the pond. The young beavers strike out on their own at age two.[6]

The main food of the beaver is aspen bark and twigs, and pond lily roots. His natural enemies are the wolf, lynx, bear, wolverine, and land otter. However, his worst enemy is severe cold which can freeze his pond to the bottom and force the beaver onto land where he is unprotected from his enemies. There are over 200,000 beavers in Alaska.[7]

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[6] Dufresne, p. 113.

## The Wolf

Of all Alaskan wild animals, the most talked about, least understood, most feared, and greatest victim of widespread ignorance is the wolf which is found everywhere in Alaska.

In 1946 Dufresne, one of the greatest Alaskan naturalists, wrote that, "the villain in Alaska's pageant of wildlife is the wolf, and this sagacious killer is equally at home in humid southeastern forests or on windswept Arctic tundra."[8] Although Dufresne has since changed his opinion in favor of the wolf, the opinion above is still held by many Alaskans.

The most recent work and the most correct and valuable in this author's opinion is Never Cry Wolf, by Farley Mowat. After actually living with a wolf family, Mowat supports the native who says, "The caribou feeds the wolf, but it is the wolf who keeps the caribou strong. We know that if it were not for the wolf, there would soon be no caribou at all, for they would die as weakness spread among them."[9]

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[7] Dufresne, p. 113.

[8] Dufresne, p. 80.

The wolf kills only what it will eat and will only kill again when hungry.[10] He kills in a very clean and quick manner and does not toy with his victim as does the bear. The wolf must work hard and patiently to kill a big game animal such as a moose or caribou which can in turn fatally injure him. It is often necessary for him to cover as much as 50 or 60 miles to make a kill.[11] Almost all carcasses left by wolves show disease which, if spread, could infect a whole herd of animals.[12] It is becoming more and more accepted that the wolf, instead of destroying the wildlife in his environment, preserves it by helping to provide the proper ecological balance.[13]

There are four main species of wolves in Alaska. Their names reveal their location. They are the Interior Alaska wolf, the Alaska Tundra wolf, the Kenai Peninsula wolf, and the Alexander Archipelago wolf.[14]

Adult wolves are as long as six feet and up to three feet high. The females are slightly smaller than males.[15] They weigh between 80 and 120 pounds, with record weights of 175 pounds.[16]

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[9] Farley Mowat, Never Cry Wolf, (New York: Dell Publishing Co., Inc., 1967), p. 143.

[10] Mowat, p. 143.

[11] Mowat, p. 145.

[12] Mowat, p. 146.

[13] Mowat, p. 147.

[14] Dufresne, p. 83.

Large animals such as the moose and caribou provide most of the wolf's food, but he also feeds on water fowl, birds, eggs, and mice by the hundreds, as well as on salmon.

The wolf is considered by Rue as one of the most intelligent of all wild animals.[17] Not one of its senses can be considered less than highly developed. Even the sense of taste is acutely developed, as attested to by those who have tried to eliminate the wolf by poison.[18] The wolf has an invaluable sense of possible danger, and it is popular among sled dog owners to interbreed wolves with husky and malamute dogs.

The wolf's ability to communicate by his howl is well-known to all. He usually travels at a trot of eight to ten miles per hour but has been clocked at 40 miles per hour for four hours.[19] The wolf is uniquely adapted to the Arctic since his blood temperature increases as the outside temperature lowers.[20]

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[15] Leonard Lee Rue III, Sportsman's Guide to Game Animals, (New York: Harper & Row, 1969), p. 100.

[16] Dufresne, p. 82.

[17] Rue, p. 104.

[18] Rue, p. 104.

[19] Rue, p. 105.

Mating takes place during January, February, and March with the young being born in litters of five to ten pups two months later.[21] The male and female wolves go to great trouble and care in selecting a den after mating. Their den is carefully hidden, cavelike and may have many rooms such as a nursing room, feeding room, and living room. Generally the den is located where the wolves have a good view of the surrounding countryside.

It is not unusual for unmated wolves to be accepted into a wolf family as aunt or uncle who act as babysitters and help bring home the food. Wolf pups are born with eyes shut, opening in five to nine days. They are covered with soft brown fur. At this time they are constantly cared for by their parents, uncles and aunts and, after being weaned in six to eight weeks, they are fed by adults regurgitating their food. The pups stay with their parents for at least one year and are carefully trained.[22]

The wolf, like the beaver, is devoted to his mate for life and is a very thoughtful parent. When he is not hunting, he is taking care of his family. "Wolves have developed one of the highest social orders of any mammals below the primate level. They adhere to strict laws that govern individual actions and status as well as the interactions of members of the group."[23] The male wolf is the leader of his family and a large pack. One of the greatest abilities of the wolf is his loyal teamwork with his immediate family and local pack in hunting game, decoying and, if necessary, fighting enemies.[24]

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[20] Rue, p. 104. [21] Dufresne, p. 82.

[22] Rue, p. 107.

The average life span of the wolf is ten to eighteen years. Their most common sign is their track which is the same as a dog but larger.[25] The adult male has no natural enemies but the pup does and is often in danger from bears, wolverines, lynx and even golden eagles. The wolf's greatest enemy in Alaska is man. Up to 1969 the State of Alaska paid a $50 bounty for each wolf killed with no restriction on the method.

## The Lynx

The lynx is found throughout Alaska except in the Panhandle. This member of the cat family feeds heavily on the Arctic hare, grouse, ptarmigan, other birds and rodents. It is so dependent on the snowshoe and other hares that its fate is coupled with the hare.

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[23] Rue, p. 102. [24] Dufresne, p. 81.

[25] Rue, p. 107.

The lynx population follows a ten year cycle based on the life cycle of the hare. When hares are scarce the lynx number only 2,000 but when hares are plentiful, there may be as many as 30,000 lynx.[26]

The lynx mates in early March and carries its young for two months, giving birth to two to five kittens. The female usually brings up the kittens alone fearing the male's cannibalistic instinct. Unlike our house cats, the lynx is not afraid of water and can swim across the largest rivers in Alaska. The fur of the lynx is much in demand. It is long and soft smokey-gray to tan in color with a face ruff of white and black. The lynx is distinguished by its black ear tuffs, two inches long. The adult weighs between 20 to 35 pounds and is 19 to 24 inches high. They are 36 to 40 inches long, with a tail about four inches long. The veal-like flesh is eaten by natives and trappers.

The lynx is well adapted to his environment. He has large padded feet that enable him to race on top of deep snow. The lynx, a cat, and the fox, a dog, are the worst of enemies, with the lynx having the advantage in deep snow. The best senses of the lynx are sight and smell. The lynx is known more for his bark than his bite since he makes terrifying sounds, but usually feeds only on rabbits.

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[26] Dufresne, p. 80.

The life span of the lynx averages about 15 years.[27] The most common sign is their track, particularly on the snow where the rounded pads stand out.[28]

## The Coyote

The coyote is found everywhere in Alaska except the southeastern islands and southwestern area. The coyote is also known as the brush wolf. Coyotes first migrated into Alaska around 1900 and since then have almost covered the State.[29]

Like the wolf, mated pairs stay together until death but unlike the wolf, this is their largest social organization. They do not hunt or travel in packs.[30] The coyote digs a den with living quarters, a nursery room, and a resting room. A separate room is built for the male while the mother is nursing the young.

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[27] Rue, p. 193.

[28] Adolph Murie, A Naturalist In Alaska, (New York: Anchor Books, 1963), pp. 13-26. Gives a very detailed description of the lynx and also its way of life from his personal observation.

[29] Dufresne, p. 84. [30] Dufresne, p. 86.

The coyote breeds in February, carries the young for two months, and gives birth to a litter of five to ten.[31] Like the wolf, the adult coyotes spend much time training their young.

Coyotes usually feed on snowshoe hares, ground squirrels, mice and birds. However, they will eat anything whether it be berries, melons, or chickens. When possible, caribou fawns, lambs, and sheep are killed. The coyote has an acute sense of smell and usually captures his prey by silently stalking. His eyes and ears are also quite sharp.

The coyote's color is grizzled buffy gray and black with yellowish ears and legs and a black bushy tail. The coyote differs from the wolf in being smaller and more multi-colored. He is 44 to 54 inches long and 23 to 26 inches high.[32] His tail is 12 to 16 inches long. He weighs 25 to 40 pounds which is less than half the wolf. At a trot the coyote averages ten to fifteen miles per hour and at a gallop 25 miles per hour, with a record of 43 miles per hour.[33]

Their life span averages eight to ten years with one record of eighteen-and-a-half years.[34] The best sign of coyotes are their tracks which are similar but longer than a dogs. Their worst enemy is the wolf which is simply a faster, smarter, better equipped, and bigger dog.

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[31] Dufresne, p. 85. [32] Rue, p. 147.

[33] Rue, p. 153.

## The Red Fox

The red fox is found throughout mainland Alaska including the islands of Kodiak, Unimak, Umnak, and some Aleutian Islands.[35] Foxes, like the wolf and coyote, do not migrate but stick to one territory where they dig a hillside den. They may leave their home for the summer but will return to the same home year after year for the winter.[36] They prefer open country due to their speed.

The red fox feeds mainly on mice but also eats hares, grouse, ptarmigan, and eggs found in unguarded nests.[37]

Breeding takes place in March with birth 51 days later in May. Foxes, like wolves, stay together as a family and both parents take care of the young. At three months of age the kitts learn hunting from their parents and at four months are usually on their own.

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[34] Rue, p. 155. [35] Dufresne, p. 87.

[36] Dorothy E. Shuttlesworth, Exploring Nature With Your Child, (New York: Greystone Press, 1952), p. 112.

[37] Dufresne, p. 87.

Foxes average 52 inches in length and weigh as much as 20 pounds.[38] They are not always red but can also be black or bluish gray. They are one of the most difficult animals to trap because their keen sense of smell can detect the human odor for some distance. The red fox trots at approximately six miles per hour and can run at 26 miles per hour.[39]

Their life span is from ten to fifteen years.[40] The most common sign is the exposed den surrounded by packed dirt and the trail which is established to feeding areas. Wolves, coyotes, and lynx will all kill the fox.

## The Arctic Fox

The Arctic fox is found from the Aleutian Islands north along the coast into the Arctic coastal area. The white color phase of this fox is found north of the Kuskokwim River and the islands of Hall, Nunivak, St. Matthews and St. Lawrence. The blue color phase is found in the Aleutian and Pribilof Islands and has been transplanted to islands in Prince William Sound and Southeastern Alaska.

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[38] Dufresne, p. 87.

[39] Rue, p. 128.

[40] Rue, p. 130.

The Arctic fox has padded feet similar to the hare and lynx which enable it to move faster on the snow. This fox weighs from four-and-a-half to 12 pounds. He stands about nine to twelve inches high and is about 30 inches long.[41] He has a short compact body which helps him retain heat in the Arctic cold.

The Arctic fox is believed to travel more than any other dog. It is thought that his life cycle is directly related to the four year cycle of the lemmings and vole, as the lynx is related to the hare's ten year cycle.[42] During the summer the Arctic fox stays in an area hunting the lemming and vole, but in the winter he travels hundreds of miles south in search of food. Also during the winter he will follow the polar bear, eating food left from the bear's kill.

Like the rest of the dog family, the Arctic fox has a well-developed sense of smell and is capable of traveling 20 to 25 miles per hour. Unlike the red fox, the Arctic fox will swim. Also, unlike the rest of the dog family, they do not maintain a family life but separate after breeding in March.[43] The female gives birth in May to a litter as big as ten to fourteen.[44]

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[41] Rue, p. 137. [42] Rue, p. 137.

[43] Rue, p. 143.

Their life span averages fourteen years. The most common sign is the fox himself, who will not hesitate to follow or come right up to humans.[45]

Their chief enemy is mass starvation during the low part of the lemming cycle. They are also killed by the wolf, polar bear, lynx, and wolverine. Unlike the red fox, these animals do not fear man and are trapped easily.[46]

The Arctic fox was the first fur-bearing animal discovered by Vitus Bering and his shipwrecked crew in 1741 in the Aleutian Islands. When Bering and his men finally managed to return to Russia carrying these fox pelts with them, the Russian-Alaska fur trade was created.

## The Wolverine

The wolverine with its bear-like body weighing only 25 to 35 pounds is considered the most vicious and destructive animal in Alaska.[47] He is called carcajou, or "Indian devil" by the natives. Even the wolf and bear fear him, as does man. The stilted cache was devised to protect food from this animal nicknamed the "skunk bear."

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[44] Dufresne, p. 92. [45] Rue, p. 145.

[46] Dufresne, p. 91. [47] Dufresne, p. 93.

Wolverines are found throughout mainland Alaska and especially north of Prince William Sound. Their compact muscular body is supported by extremely muscular legs. They are colored dark brown with two pale stripes running the length of their body. A broad head, short ears, and beady eyes make the wolverine look as smart and devious as he is.[48]

This animal is the largest member of the weasel family. He mates in January or February, having two to four cubs in April or May. The cubs are creamy white in color and are fiercely defended by their mother.

The wolverine travels, lives, and hunts alone. His main diet is the hare, along with marmot, porcupine, mice and birds. He is so courageous he will kill caribou, sheep and goats. His ability to avoid traps is amazing and he can literally destroy the interior of a cabin he gets into.[49]

### The Marten

The marten, a member of the weasel family, is found in Alaska wherever there are coniferous trees. This golden brown animal is the size of a house cat. He has a large orange patch on his throat and dark brown furry feet.[50] He has the most beautiful fur of all Alaskan fur animals in richness of color and softness.

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[48] Dufresne, p. 94.

[49] Murie, pp. 119-134. Murie discusses his observations of the wolverine and its way of life in McKinley Park. Good reading for seventh and eighth grades or older.

The marten weighs from two to three pounds and is about 25 inches long.[51] His sharp claws allow him to climb trees rapidly. He has large ears and eyes and his sight is as sharp at night as it is during the day. Aside from the wolverine, the marten is one of the most courageous and fighting of animals.

Marten carry their young for a very long period of 270 days after mating in early August. One to six young are born.[52] Marten feed on birds, eggs and rodents as well as berries, plants and roots. Their most common sign is their track.

## Land Otter

The land otter is found from Ketchikan to the Arctic Circle and as far west as Univak Island in the Aleutians.[53]

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[50] Mariette S. Pilgrim, Alaska: Its History, Resources, Geography, and Government, (Caldwell, Idaho: The Caxton Printers, Ltd., 1952), p. 304.

[51] Dufresne, p. 97.

[52] Dufresne, p. 98.

[53] Dufresne, p. 99.

This member of the weasel family is specifically adapted for the water with broad webbed feet. He is usually four to five feet in length and has a dark brown dense soft fur which is covered by stiff guard hairs. The fur is considered the strongest and most long-lasting of Alaskan furs.

Unlike the rest of the vicious bloodthirsty weasel family, the land otter is quite friendly and makes a good pet. He is the most playful of all wild animals. He feeds mainly on fish but will also eat ducks, muskrats and small beaver.

A sure sign of land otter is the toboggan-like trail on river banks where he slides along enjoying himself at play.

The land otter's home is an underground chamber reached by one or more long tunnels. He mates in late February or early March and in two months a litter of one to five young are born.[54]

## Sea Otter

The sea otter is small in number throughout the Aleutian Islands. He is four times heavier than the land otter and is specially adapted to the ocean environment

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[54] Dufresne, p. 101.

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where he spends almost all of his life.[55] This animal habitually swims on his back, feeding himself by tossing food in the air and catching it in his mouth.

Before the Russians came in 1740 this beautiful fur-bearing animal was found from San Francisco Bay to the Arctic Ocean in great numbers. By 1867 it was almost extinct.[56]

The sea otter is four feet in length plus a thick tail of 12 inches and weighs between 70 and 90 pounds.[57] He feeds mainly on the spiny sea urchin. He is dark brown or black in color sprinkled with silver or gold. He spends most of his life in kelp beds to protect himself from his greatest enemy, the killer whale. Very little is known of the mating habits of this animal.

To protect the sea otter from extinction the United States Government prohibits hunting them.

## The Mink

The mink is found throughout Alaska and is a large member of the weasel family. He has dark brown fur widely sought for its beauty and durability. The mink weighs about two pounds and is long, slender and short-legged.[58] He feeds on small mammals and birds as well as fish.

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[55] Dufresne, p. 102.

[56] Dufresne, p. 103.

[57] Dufresne, p. 103.

Alaskan owls are the mink's worst enemy with other animals disliking the odor the mink discharges. February or March is the mink mating season and during this time bloody battles are fought. After 45 to 50 days the female gives birth to three to seven kitts.[59]

Mink is considered the most valuable of Alaskan fur animals.[60]

## The Weasel

There are two types of weasels differing only in size. The smaller weasel measures from eight to eleven inches and weighs about four ounces. The larger one is fourteen to sixteen inches long and weighs about seven ounces. This is the tiniest carnivorous animal in the world and shares the same territory as the world's largest carnivore, the brown bear.[61] The weasel lives mainly on small rodents, hares, and birds. Weasels are chocolate brown in summer and snow white in winter.

They mate in the early spring and carry their young for 40 days, giving birth to six to eight babies.[62] The weasel, like the wolverine, is often found in Eskimo folklore demonstrating his wisdom or courage.

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[58] Dufresne, p. 105.

[59] Dufresne, p. 107.

[60] Pilgrim, p. 302.

[61] Dufresne, p. 109.

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[62] Dufresne, p. 110.

## EXERCISES

1. Find out if the Russians settled in your area. If they did, investigate to find out if they trapped fur-bearing animals and how your community was influenced by the Russians. Are there people with Russian surnames; is there a Russian Orthodox church; are there any Russian buildings that remain? Are there any customs or traditions still observed in your community that had Russian origins?
2. Many school age children in Alaska trap fur-bearing animals. If you run your own trap line, write a report on the animals you trap and how you do it. If you do not trap yourself but know someone who does, ask them if you might help run their trap line and write a report on your activities.
3. What fur-bearing animals live in your area? If you have any pelts, bring them to school and have your fellow students identify them.
4. Make a list of the various types of clothing you have seen made from furs.
5. In what ways has government enforcement and wildlife management helped to protect the fur-bearing animals in your area?
6. Beaver are found almost everywhere in Alaska. If

possible, find a beaver pond near your home and study it. Draw a picture of it showing the wildlife that depend on its ecological life zone.

## REVIEW QUESTIONS

Tear out this page and answer the questions as you reread the chapter.

1. What part have the fur bearing animals played in the history of Alaska?
2. What is important about September 8, 1740?
3. Who were the "Promshlenyiki"?
4. Who was the "old man of the sea"?
5. What happened to the Pribilofs after the Russian discovery in 1786?
6. When did the Americans buy Alaska and for how much?
7. The most important fur-bearing Alaskan mammal is the ________.
8. What does the beaver do in keeping the ecological balance of the Alaskan wildlife environment?
9. Where is the beaver found in Alaska?
10. The beaver weighs between ________ and ________.
11. The beaver is the largest of the ________ family.
12. What is unusual about the beaver's coat?
13. A beaver usually has how many mates?
14. What is the main food of the beaver?
15. What is the beaver's worst enemy?
16. What does the native mean, "The caribou feeds the wolf, but it is the wolf who keeps the caribou strong"?

17. How does the wolf help keep the proper ecological balance?
18. List the four main species of wolves in Alaska.
19. Adult wolves average how much in weight and length?
20. What senses of the wolf are highly developed?
21. The wolf, like the beaver, is devoted to a single mate for ________.
22. Why are wolves considered to have one of the highest social orders?
23. The most common sign of wolves are their tracks which are the same as a ________, but larger.
24. The lynx is found where in Alaska?
25. The lynx is a member of the ________ family.
26. The lynx population is directly related to the _______ population for survival.
27. The ________ of the lynx is much in demand.
28. Tell how the lynx is well adapted to his environment.
29. Where is the coyote found in Alaska?
30. Like the wolf, the coyote belongs to the ________ family.
31. The coyote was first found in Alaska around what date?
32. What is the coyote's sharpest sense?
33. What is the worst enemy of the coyote?
34. Where is the red fox found?
35. Do wolves, coyotes, and foxes migrate?

36. What does the red fox feed on?

37. Why is the red fox difficult to trap?

38. What is the common sign of the red fox?

39. Where is the Arctic fox found in Alaska?

40. Tell how the Arctic fox is adapted to its environment.

41. Survival of the Arctic fox is directly related to the four-year cycle of the ________ and ________.

42. Why does the Arctic fox follow the polar bear?

43. What is the chief enemy of the Arctic fox?

44. Why is this member of the dog family important to Alaskan history?

45. What does carcajou mean?

46. Why is the wolverine called carcajou?

47. The wolverine is nicknamed the skunk bear but it is really a member of what animal family?

48. The marten is trapped for its beautiful ________.

49. The marten is found where in Alaska?

50. What is unusual about the marten's gestation period?

51. How is the land otter specifically adapted for water?

52. Land otter fur is valued because it is ________.

53. In what way is the land otter different from other members of the weasel family?

54. Besides his tracks, a sure sign of the land otter is his ________.

55. Describe a land otter's home.

56. How much larger is a sea otter than a land otter?

57. By 1867 what had happened to the sea otter?

58. What is the natural enemy of the sea otter?

59. Where does the sea otter spend most of its time?

60. Where is the mink found in Alaska?

61. What is the color and size of the mink?

62. The weasel is the smallest ________ in the world and shares the same territory as the world's largest ________, the ________ ________.

63. The weasel is found in Eskimo folklore for his ________ and ________.

## NOTES FOR TEACHERS

The most important concept in this chapter is the historical relationship between the fur-bearing animals and the coming of the first white men, the Russians. After studying the material up to this point it is important for the student to have reached an understanding of why Alaska was a balanced ecosystem before 1740 and why it has been unbalanced since that time. Can the student relate why, before 1740, the Alaskan subsistence native was a balanced part of the ecological whole and how the immigrating Anglo in his exploitation of resources and wildlife has unbalanced this?

Be objective in discussing Russian-Alaska. There is little to justify the early period of the "Promyshlenyiki" but the nineteenth century governing by Baranof and Wrangell was farsighted, humane, and progressive. Much more so than the first 50 years of United States rule with no government at all.

The Russian influence gives depth and variety to the culture of Alaska today. Many Alaskan students have Russian blood, if not Russian names, and a teacher should encourage their pride in this background.

The beaver represents a concept the understanding of which should be an important objective. This industrious little animal is responsible for creating an ecological life zone that many other forms of wildlife are also dependent upon. The student should be able to list what forms of life are dependent on the beaver and why.

# Chapter 7

# RODENTS

The rodents of Alaska perform a very valuable function in maintaining the ecological balance of the State. The rodents provide food for the larger members of the weasel family, dog family, bear family, and cat family. These families in turn prey and feed on the larger ruminants such as the moose, caribou, and deer. This keeps the herds thinned of the aged and diseased and keeps these vegetarians from getting overpopulated and destroying the plant life that sustains them.

As a mammal, man fits into the ecological whole of nature and he also benefits from the small, numerous rodents. He feeds on the animals that are indirectly fed by the rodents.

The following is a short list of Alaskan rodents and their characteristics.

## The Muskrat

Muskrats are found from Southeastern Alaska to Kotzebue Sound. They are called the little cousin of the beaver and are just as industrious. They usually make their den in a beaver pond.

Muskrats are 22 to 24 inches long, ten inches of which is tail. They look like large rats with partly webbed hind feet. They are brown in color and weigh two pounds.

Muskrats mate in April and May and carry their young for 30 days. Their litters number three to twelve.[1]

Muskrats feed on aquatic and marshlike vegetables and fresh water fish. They have many enemies including the wolf, weasel, fox, wolverine, lynx, hawk, owl, eagle, mink, and otter. However, like the beaver, their worst enemy is the freezing of their pond which denies them a safe hideaway.

## The Varying Hare

The varying hare is located from Prince William Sound to the limit of spruce trees. This rodent looks like a large rabbit and is best known for changing his color from tan in summer to pure white in winter. Their weight is from three to four pounds and length is 18 to 19 inches.

Varying hares mate in March and April and carry their young for 30 days. They give birth to four to eight babies. At the peak of their ten year cycle there are millions of these rabbits in Alaska. The varying hares eat willow bark and twigs. They warn other hares of danger by thumping their feet.[2]

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[1] Frank Dufresne, Alaska's Animals and Fishes, (Portland: Binfords & Mort, 1955), pp. 114-117.

The number of varying hares directly effects the lynx, foxes, and coyotes that prey on them.

## The Arctic Hare

The Arctic hare is found from the Alaska Peninsula north along the Bering Sea into the Arctic region. This is the largest of all American hares and the summer gray-brownish coat changes to pure white in winter. The worst enemy of the Arctic hare is the snowy owl.

The Arctic hare weighs nine to twelve pounds and is 24 inches long. The rest of its characteristics are similar to the varying hare.[3]

## The Pika

The pika also belongs to the rabbit family but looks like a guinea pig. It is found on the mountain slopes of Central Alaska. The pika is colored from gray to pink and is about seven-and-a-half inches long.[4]

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[2] Dufresne, pp. 118-120; see also Leonard Lee Rue III, Sportsman's Guide to Game Animals, (New York: Harper & Row, 1969), pp. 357-370.

[3] Dufresne, pp. 121-122; see also Rue, pp. 371-378.

The Porcupine

The porcupine is found everywhere in Alaska except on the islands. Porcupines are from 36 to 40 inches long and weigh 15 to 25 pounds. This is a tree climbing rodent and is also quite edible for man.[5]

Squirrels

The Alaska red squirrel is found throughout the State wherever there are coniferous forests. The red squirrel is 12 inches long including his tail which he uses for balancing. He weighs eight to nine ounces and eats cones, buds, mushrooms, seeds, berries, and eggs.

The mother squirrel has a litter of four to six infants about March and sometimes again in mid-summer. The squirrel is considered a devoted mother. Her babies are born blind and without hair.[6] At eight to nine weeks of age young squirrels are grown and have a full coat of fur.

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[4] Dufresne, pp. 123-124; see also Mariette S. Pilgrim, Alaska: Its History, Resources, Geography, and Government, (Caldwell, Idaho: The Caxton Printers, Ltd., 1952), p. 305.

[5] Dufresne, pp. 125-126; see also Pilgrim, p. 306; see also Rue, pp. 310-322.

[6] Dorothy E. Shuttlesworth, Exploring Nature With Your Child, (New York: Greystone Press, 1952), p. 98.

The flying squirrel is found in Southeastern Alaska and north on the mainland to the limit of spruce trees. He has a soft velvety fur coat colored from brown to pink and is as long as 14 inches. He feeds on berries, nuts, buds, and seeds.

The ground squirrel is found on the mainland. He is 15 to 18 inches long including his tail and is gray in color during the winter, and brownish in summer. Like other squirrels, the ground squirrel hibernates for six to eight months of the year. Ground squirrel fur is popular with the Eskimos and Indians for parka trim.[7]

### The Marmot

The marmot is found in Southeastern Alaska and on the mainland north of the Arctic Circle. This animal is called the "watchman of the crags" because it gives a shrill whistle when it sees danger and alerts all animals within hearing range.

Marmots are silvery-white to gray with black tips. They have a cinnamon colored rump and tail. They are 28 to 29 inches long and weigh around nine to thirteen pounds. Their hides are popular with the Eskimos for decoration on parkas.[8]

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[7] Dufresne, pp. 127-131 and 134-137; see also Pilgrim, pp. 307-308; see also Rue, pp. 292-300.

### The Lemming

The lemming is found in central, western, and northern Alaska, on the Alaska Peninsula, and on the islands of Unalaska, Umnak, St. George, Nunivak, and St. Lawrence. The brown lemming stays brown all year, whereas the collared lemming becomes white in winter. The summer coat of the collared lemming is gray to buff. The lemming is the only rodent that mass migrates when it reaches its peak in population. The migration continues blindly until eventually those that are left throw themselves into the sea. Lemmings look like large mice with a length of six inches.[9]

### Mice

The lemming mouse and the meadow mouse are found throughout Alaska. The lemming mouse is smaller in both number and in size than the meadow mouse. It is less than five inches long and colored yellowish-brown to black. The meadow mouse, or vole, is preyed upon by the bear family, dog family, and cat family. Colored chestnut brown to gray the meadow mouse is six to eight inches long and produces several litters of four to eight young each year.[10]

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[8] Dufresne, pp. 131-134; see also Pilgrim, p. 306; see also Rue, pp. 254-261.

[9] Dufresne, pp. 139-142; see also Pilgrim, p. 307.

The red-backed mouse is found in the rain forests of the Panhandle along the coast to Norton Sound. It is orange with a chestnut colored back. This mouse is five-and-a-half inches long.

The white-footed or deer mouse is found south of Central Alaska and is the most widespread and common of North American mice. The deer mouse is seven to eight inches long and feeds on seeds and plants.

Alaska also has the jumping mouse in Southeastern Alaska, the brown rat found in sea ports and coastal areas, and the familiar house mouse.[11]

## The Shrew

The shrew is found throughout mainland Alaska and on some of the islands. The shrew is not much wider than a lead pencil and is about two-and-a-half inches long. This rodent is capable of devouring mice twice its size. The shrew usually travels in tunnels made by mice, and he does much damage to food left uncached.[12]

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[10] Pilgrim, p. 307.

[11] Dufresne, pp. 143-152; see also Rue, pp. 325-331.

[12] Dufresne, pp. 157-160; see also Pilgrim, p. 307.

## Alaskan Bat

The Alaskan little brown bat is the smallest bat on the North American continent. It is three-and-a-half inches in length, colored dull brown, and is found along the humid coast from Ketchikan to Kodiak Island.[13]

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[13] Dufresne, p. 161.

## EXERCISES

1. Make a mural showing how man indirectly feeds on rodents. Starting with the smallest of rodents show all the Alaskan animals that feed on these small mammals, which man, in turn, feeds on.
2. Make a list of all the rodents found in your area of Alaska. On this list show which rodents are used by man and for what purpose. For example, hares for food and fur trim; muskrats for fur.

## REVIEW QUESTIONS

Tear out this page and answer the questions as you reread the chapter.

1. Why are rodents so important to the ecological balance of Alaska?
2. How is man connected with the rodents?
3. Muskrats are called the little cousins of the ______. Explain why.
4. Describe the muskrat by size and color.
5. As with the beaver, the worst enemy of the muskrat is ______.
6. You will find the varying hare wherever you find ______.
7. How is the varying hare like the ptarmigan?
8. The numbers of varying hare directly effect the numbers of ______.
9. Where is the Arctic hare found in Alaska?
10. The Arctic hare is the ______ of all American hares and weighs nine to twelve pounds.
11. How is the Arctic hare adapted to its environment?
12. What is the worst enemy of the Arctic hare?
13. The pika looks like a ______ and belongs to what family?
14. Where is the porcupine found in Alaska?

15. How is the porcupine adapted by nature to protect itself from enemies?

16. The Alaskan red squirrel is found wherever there is ________.

17. What is the color and size of the flying squirrel?

18. Why is ground squirrel fur popular?

19. Tell shy the marmot is called "watchman of the crags."

20. Marmots are actually ________.

21. Where is the marmot found in Alaska?

22. What does the Eskimo use the marmot's skin for?

23. Lemmings look like large ________.

24. How do lemmihgs control their populatioh growth?

25. List the five kinds of mice found in Alaska and where they are found.

# NOTES FOR TEACHERS

The main behavioral objective of this chapter is for the student to realize and to show why even the smallest mammal is as necessary to the ecological whole as the largest.

The student should be able to give specific examples of the interdependency of all animals upon one another in nature.

Examples: The lynx population is directly related to that of the hare which makes up most of its diet. The enormous grizzly bear feeds constantly on the tiny mouse. The marmot warns other animals of approaching danger.

## Chapter 8

## STRANGE WATER MAMMALS

Seals, walruses, and sea lions are carnivorous mammals. Recent research relates the hair seal to the weasel family, and the sea lion, fur seal, and walrus to the bear family.[1] These mammals spend much of their time in the water and have evolved special adaptations which enable them to survive in their environment. Their bodies are streamlined for propulsion and steering. They have a thick insulating layer of blubber to protect them from the cold and help them float with ease.

These water animals do not breathe regularly like other mammals but will take many short breaths and then stop, even on land. By shutting off the oxygen rich blood to the brain and muscles they can stay underwater for a long time.[2]

### Seals

The seal's face is dog-like with large close-set eyes and long whiskers, but no ears. His arms, legs, and feet are flippers. He keeps his coat waterproof with oil glands, as do the water birds. Seals do not migrate and spend about half of their time on land resting. They feed on whatever fish are available. The seal's eyesight is his most valuable sense.[3]

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[1] Leonard Lee Rue III, Sportsman's Guide to Game Animals, (New York: Harper & Row, 1969), p. 209.

[2] Rue, p. 209.

Adult seals bark to communicate and during the breeding season the bulls roar. Seals can barely move on land but can travel through water at 15 miles per hour. They can dive to a depth of three hundred feet and stay submerged for as long as 30 minutes. Seals mate in September and give birth to a single pup the following July. Their life span is a maximum of 19 years.[4]

The only time signs of a seal can be seen is at low tide when they have left tracks and dragmarks on a sand bar. The seal's enemies are killer whales, sharks, and polar bears.

The native people of Alaska hunt the seal for food and oil, and use the hides for clothing. Recently the white man has hunted it more and more for sport.

The largest and most widely distributed seals in Alaska are the Pacific harbor seals, or hair seals, found everywhere along the Alaskan coast. The Eskimos call them "oogruk". They are covered with coarse short hair colored gray and yellow with splotches of dark color. They are about 60 inches long and weigh 70 to 100 pounds.[5]

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[3] Rue, pp. 214 and 216. [4] Rue, pp. 217-218.

The ringed seal is found from the Kuskokwim delta into the Arctic Ocean. This seal is slightly larger than the harbor seal and lighter in color.

The ribbon seal is distinguished by ribbons of orange-colored hair circling his neck, shoulders, and tail against a background of brown. He is found from the Pribilof Islands northward through the Bering Straits. The ribbon seal is a prize catch for the Eskimo who desires its beautiful pelt.

The largest of Alaskan earless seals is the Pacific bearded seal which gets its name from the bristles on its muzzle. The bearded seal is as long as ten to twelve feet and is dark gray on the back and silvery to yellow underneath.[6] This seal is found from Nunivak Island northward to the polar ice cap. Its smooth fur and thick blubber are very important to the Eskimo.

The Alaskan fur seal is found in summer on the Pribilof Islands. This seal is migratory and spends the winter along the Washington, Oregon, and California coasts.

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[5] Frank Dufresne, Alaska's Animals and Fishes, (Portland: Binfords & Mort, 1955), p. 164.

[6] Dufresne, p. 167.

Their population on the Pribilofs in summer is over two million. The male will weigh up to 500 pounds and is black with gray on the shoulders and neck. His face is red.[7]

The bulls reach the Pribilofs first for mating in early summer. The cows are approximately one-fifth the size of a male and up to one hundred cows make a harem for a large bull.[8] The cows carry their young for one full year.

The State Government controls the taking of these seals for their beautiful fur and their number has steadily increased since the time of the Russians.

Sea Lions

The northern sea lion is found all along the Alaskan coastline to the Pribilof Islands. A sea lion bull can weigh as much as 2,000 pounds and be ten feet long. The females are about one-half this size. Although it has only a few hairs on its body the sea lion is closely related to the fur seal and, like the fur seal, it acquires harems, although smaller. The sea lion is red-brown in color.

A sea lion differs from a seal in having ears at the side of his head and in being able to turn his back flippers forward which enables him to crawl on land. Sea lions spend most of their time on shore while seals are mostly in the water.

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[7] Dufresne, pp. 168-169. [8] Dufresne, p. 170.

Walrus

The Pacific walrus is found from Nunivak Island north to the polar ice cap. The name walrus comes from the Scandinavian "hvalross" meaning whale-horse.[9] Walrus are yellowish-brown on the back and red underneath. Their skin is very thick, wrinkled and almost without hair except for the mustache of the big bull. The bull weighs around 3,000 pounds and is eleven to thirteen feet long.[10] His skin is from one to two-and-a-half inches thick. Under the skin on the walrus's neck are two bladders which can be filled with air and act like water wings enabling a walrus to float while sleeping.[11]

Walrus migrate from the Arctic during the winter to warmer waters in the south.[12] They are a herd animal and if attacked, will all come to the aid of one and fight violently if necessary.[13]

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[9] Rue, p. 221. [10] Dufresne, p. 175.

[11] Rue, pp. 222-223. [12] Rue, p. 223.

To feed they stay in shallow water digging out with their tusks mollusks, shellfish, and other seafood from the ocean floor, all of which they swallow whole. Their tusks are believed to be over-developed canine teeth and sometimes reach 30 inches in length.[14]

The most important sense for the walrus is touch with the use of his sensitive whiskers. His eyesight, hearing, and smell are all quite poor. The breeding period is during April and May with bulls usually keeping the company of only one cow. They are very capable of fighting a vicious battle for their mate using their tusks. The females carry their young for 380 days and give birth to a single calf. At birth the calf is four feet long and weighs about 100 pounds. Calves are well cared for by their mothers.[15]

Walrus can live to be thirty years old. Their most feared enemy is the killer whale. They are very important to the Eskimo who uses the dark, very fat flesh for feeding himself and his dogs. The oil is used in lamps and for cooking, and the strong hide is used for oomiaks (boats) and dog harnesses. The clams in the walrus stomach are used for clam chowder and the intestines are used for raincoats. Eskimos are excellent craftsmen and make beautiful carvings and jewelry out of walrus tusks.[16]

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[13] Dorothy E. Shuttlesworth, Exploring Nature With Your Child, (New York: Greystone Press, 1952), p. 132.

[14] Shuttlesworth, p. 133; see also Rue, p. 224.

[15] Rue, p. 225.

Whales and Porpoises

The last two groups of mammals to be included are the largest animal on earth, the whale, and the smartest animal, next to man, the porpoise. The whale is a true mammal that is warm blooded, breathes air and suckles its young. The porpoise is actually a small whale. Porpoises have one of the largest brains of all mammals and also a highly developed language system.

Whales

It is believed that the whale reversed the evolutionary process and moved from land to the water. Hind legs are found buried within its flesh. Its front flippers are of little use and were possibly legs at one time.[17]

The whale swims by moving his horizontal tail fin up and down like a paddle.[18] Although he appears to spout water, he is actually exhaling air which, because it is warm, condenses. Whales have a short life span of a maximum 20 years. The young are born one-third the size of their mother. For warmth whales are covered by thick layers of blubber beneath an almost hairless skin. The oil from their blubber is made into glycerine, margarine, soaps, and ointments, while the flesh and bones are made into fertilizer. Whales provide the Eskimo with food, oil, and bones used in buildings.

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[16] Rue, pp. 226-227. [17] Dufresne, p. 177.

There are two types of whales, the baleen or whale bone whales, such as the bowhead and blue whale, and the toothed whales, such as the killer and sperm whale.

### Baleen Whales

The baleen whales have whalebone slabs hanging from the upper gum. This is a springy material made up of 350 to 400 blades on each side of the mouth which act like a screen to strain out shrimp and small sea life which a whale eats by the ton. At one time there was a large market for this bone to be used for corset stays, hoop skirts, and buggy whips.

The blue whale is the largest of all whales. The record blue whale was 89 feet in length and weighed 120 tons. The larger female is believed to measure up to one hundred feet and weigh 147 tons. This size can be reached by age two. As the name states, the whale is colored blue with light gray areas. Blue whales migrate throughout the oceans of the world.[19]

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[18] Dufresne, p. 177.

The finback whale has a long slender body and wedge-shaped head. One of the fastest and most dangerous of whales, the finback's exhalation may reach 20 feet in the air. Males are up to 70 feet long and females are 82 feet. They are colored brown to gray. The finback is further distinguished by having about 70 to 80 folds of skin on its underthroat.[20]

The bowhead whale is found mainly in the Arctic and is hunted by the Eskimos in May and June for its black hide, or muktuk, which is a delicacy. The blubber and flesh provide tons of food. The bowhead has a short stout body with a large head. Their length is up to 60 feet, and weight can reach 70 tons. They are black with a white underside.[21]

The humpback whale is found in the Bering Sea and the sheltered waterways of the Panhandle. It is black with white underneath and reaches an average length of 48 feet.[22]

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[19] Dufresne, pp. 179-180.

[20] Dufresne, pp. 181-182. [21] Dufresne, p. 183.

The gray whale is found only in the North Pacific. He is 45 feet long, and has black and gray coloration.[23]

The Sei whale is a small finback in size and looks. It is found as far north as the Bering Sea. The Sei is between 50 and 60 feet in length and blue-gray in color. This whale migrates to subtropical waters in search of a mate.[24]

The little piked whale is the smallest of this group of whales and is found close to the shore. The maximum length of the little piked whale is around 33 feet and his color is gray.[25]

## Toothed Whales

The largest of the toothed whales is the sperm whale and second largest is the most feared and dangerous of mammals, the killer whale. Also part of this group are the white beluga (the grocery store of the Eskimo), the beaked whale, and the Dall and harbor porpoises. These animals have teeth rather than baleen in their mouths and they eat larger food such as squid, octopus, and fish.

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[22] Dufresne, p. 185. [23] Dufresne, p. 186.

[24] Dufresne, p. 188. [25] Dufresne, p. 189.

The dark blue-gray sperm whale has 25 to 27 large teeth and reaches 60 feet in length. This whale can speed at 15 miles per hour when alarmed, and is capable of eating a man.[26]

The black and white killer whale has the most powerful jaws and is the fastest swimmer of all whales. A killer whale can easily slay a porpoise or a seal with one bite and it can kill even the largest whales. Their maximum length averages 30 feet.[27]

The white whale is found in the Arctic Ocean and Bering Sea south to Kodiak Island, and has been found 600 miles up the Yukon River. This whale is 11 to 13 feet long and colored pure white.[28]

Porpoises

The Dall porpoise is found in Alaskan waters as far north as the Aleutian Islands. The Dall is capable of speeds up to 30 knots and travels in schools of 40 to 60.[29] This black and white porpoise is six feet in length and weighs 200 pounds. The Dall are noted for their habit of playing near moving ships.

The Pacific porpoise is found in the same waters as the Dall but does not play by ships. It resides near glaciers and river mouths. The Pacific porpoise is dark brown in color and grows four to five feet long.[30]

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[26] Dufresne, p. 192. [27] Dufresne, p. 194.

[28] Dufresne, p. 194. [29] Dufresne, p. 196.

The porpoise is believed to be one of the most intelligent of mammals. Scientists are studying the possibility that porpoises have developed a language system of their own.

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[30] Dufresne, p. 199.

## EXERCISES

1. Draw outlines of whales and identify each kind by its shape.
2. Research relates the hair seal to the weasel family and the sea lion, fur seal, and walrus to the bear family. After studying these animals, make a list of those characteristics that you think would place the animals in these families.
3. Start a collection of Eskimo carvings made from the ivory of the walrus tusk.
4. If you live near a coastal town or village, investigate and find out if strange water animals are hunted and what they are used for.

## REVIEW QUESTIONS

Tear out this page and answer the questions as you reread the chapter.

1. The hair seal is related to what family?
2. Sea lions, fur seals, and walruses are related to what family?
3. How are the water mammals adapted to their environment?
4. How do water mammals breathe?
5. How does a seal keep its coat waterproof?
6. What signs are left by a seal?
7. Why is the seal important to the native people of Alaska?
8. Where in Alaska would you find: the Pacific harbor seal; the ringed seal; the ribbon seal?
9. The Pacific bearded seal is the ________ of Alaskan earless seals.
10. Where does the Alaskan fur seal spend its winters and summers?
11. How much can a sea lion bull weigh?
12. In what ways does a sea lion differ from a seal?
13. What does the Scandinavian "hvalross" mean?
14. How much can a bull walrus weigh and how long can it be?

15. How can a sleeping walrus float?

16. The tusks of the walrus are believed to be what?

17. How does the walrus touch?

18. What enemy is most feared by the walrus?

19. How is the walrus used by the Eskimo?

20. What is the largest animal on earth?

21. Why is the whale a true mammal?

22. What is meant by, "It is believed that the whale reversed the evolutionary process"?

23. Does a whale actually spout water? Explain.

24. What products are made from whale oil?

25. List the two types of whales.

26. What is baleen?

27. How big was the record blue whale?

28. What baleen whale is hunted by the Eskimo and why does he hunt it?

29. Which whale is the largest of the toothed whales?

30. Which whale is the "grocery store of the Eskimo"?

31. Which whale is the most feared and dangerous?

32. In what Alaskan waters is the Dall porpoise found?

33. What is the well-known habit of the Dall porpoise?

## NOTES FOR TEACHERS

The mammals that inhabit the waters surrounding Alaska are indeed strange but also important to the well-being of many Alaskans. Even today an Eskimo village can look forward to a winter of starvation if they miss the beluga whales during the summer. The seal is important to Indian and Eskimo for the warm and durable pelts it provides. As the student studies this unit, the teacher should present the concept of economic importance during the history of Alaska and even today in the native villages.

This chapter consists mainly of the physical features of strange water mammals. The student, from these descriptions, should be able to identify outlines or pictures of the animals.

# Chapter 9

# FISH

Alaska has 26,000 miles of ocean shore line, seven million acres of lakes and tens of thousands of rivers.[1] It is not surprising then that every part of Alaska is fishing country.

One hundred thirty-five kinds of fish along with the hard-shelled dungeness and king crab and shrimp provide Alaska with a very important income. Alaskan king crab and salmon are in demand all over the world and commercial fishing supports Alaskans from Ketchikan to Nome. The fishing industry employs approximately 15,000 people.[2] A large canning industry also thrives since all fish caught in Alaskan waters are cleaned and packed in Alaska at locations all up and down the coast.

Fish caught only for sport also contribute to Alaskan income since they attract fishermen from all over the world.

Many fish have a unique organ called a "swim bladder" which is filled with a mixture of oxygen and nitrogen and enables the fish to stay in one place in the water with very little effort. Fish with skeletons of bone have this bladder, whereas fish with gristle skeletons, such as sharks, do not.

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[1] Frank Dufresne, Alaska's Animals and Fishes, (Portland: Binfords & Mort, 1955), p. 203.

[2] Stuart R. Tompkins, Life In America: Alaska, (Grand Rapids: The Fideler Company, 1963), p. 60.

Fish breathe with their gills which are covered by flat bony flaps just behind the head. The fish takes in water through his mouth and then forces it out through the gill slots which absorb the oxygen through tiny blood vessels in the gills.

The fins just behind the gills are called pectorals. Another pair towards the middle of the body are called the ventrals if they are closer to the head, or the pelvics if they are closer to the tail. The fin on the back is called the dorsal fin and on the bottom toward the tail is the anal fin. The tail fin is called the caudal. The tail fin gives the fish speed. On a fast fish like the trout the tail is forked. For the slow swimmers the tail is blunt or rounded. The dorsal and anal fins act as keels to prevent rolling. The pectoral fins act as brakes and for turning to left and right (sideways).

Scales are an "outside skeleton" for fish and show rings for each year of age. Fish are not the fast swimmers they appear to be. The mighty Alaskan king salmon is capable of 25 miles per hour.[3]

Fish, like mammals and birds, are colored for camouflage. Their upper parts are colored to match the floor or depths of the water they swim in. Their lower parts are brighter to blend with lighter water above the fish. Fish have no eyelids or ears, but they sense noise through other organs. They are nearsighted and have poor eyesight.

## Salmon

Salmon is the most important fish in Alaska and more salmon are caught each year than any other fish in Alaskan waters. It is not unusual for one-half billion pounds of salmon to be caught in a season, at a value of fifty million dollars.[4] Salmon are caught with trolling line or seine nets on commercial fishing boats.

The king salmon is found in Alaska from Ketchikan to the Yukon River. It is also known as the chinook salmon and is the largest salmon found in Alaskan waters. Its weight averages from 15 to 65 pounds with a record of 126 pounds.[5] The king salmon has a good rich flavor all year and is an extremely fat fish found with either red or white meat. It has a blue-silver color. The king spends much of his time along the shoreline and gives an unforgettable thrill to the sportsfisherman who fights this tremendous weight.

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[3] Dorothy E. Shuttlesworth, Exploring Nature With Your Child, (New York: Greystone Press, 1952), pp. 168 and 170.

[4] Tompkins, p. 56.

The silver salmon is found from Ketchikan to the Arctic Ocean. It weighs between six and 25 pounds and has excellent red meat.[6] It has a silvery bluish-green color and looks like a small king salmon.

The dog salmon and humpback salmon are found in Alaskan rivers.

Salmon provide the most spectacular of spawning migrations. They swim hundreds of miles from the ocean up fresh water streams leaping over gigantic water falls before laying their eggs in quiet waters and dying.

The salmon of Alaska were first canned in Sitka and Klawock in 1878. The original production was approximately 1,000 cans and has since developed into an industry that now supplies half the world supply of salmon. Alaska exports canned, fresh, frozen, salted, smoked, and oil-packed salmon as well as salmon eggs for caviar and salmon for fertilizer and oil.[7]

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[5] Dufresne, pp. 272-273. [6] Dufresne, p. 264.

## Trout

The trout is a famous fish found throughout Alaska. Trout are particularly fond of insects which make them favorites of the fly fisherman. Trout in Alaska range from half a pound to 25 pounds.

A female trout lays hundreds of eggs on the gravel bottom of a slow moving stream. She forms a shallow hole with her tail in which to lay her eggs. The female continues to do this as she moves upstream. The male soon follows and fertilizes the eggs.

Rainbow and steelhead trout are found in greatest numbers south of the Alaska Range and Bristol Bay. They are also found in Southeastern Alaska. These fish can average as much as 16 to 32 inches in length. The rainbow is pink in color. The steelhead is found mostly in Southeastern Alaska and looks like a small salmon weighing six to twenty pounds with a record of 30 pounds.[8]

The cutthroat trout is found primarily in Southeastern Alaska with some in Prince William Sound.

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[7] Mariette S. Pilgrim, Alaska: Its History, Resources, Geography, and Government, (Caldwell, Idaho: The Caxton Printers, Ltd., 1952), pp. 244-245.

[8] Dufresne, pp. 218 and 220.

The dolly varden is found throughout Alaska and is a form of brook trout. It measures from 12 to 25 inches in length and is greenish blue in color. It is often confused with cutthroats and rainbows. The dolly varden is a western form of brook trout and outnumbers all other trout in Alaska.[9]

Closely related to the dolly varden is the Arctic char, sometimes weighing more than 20 pounds.[10] The char is found in Northwestern Alaska. It is green-brown on the back with silver and red underneath, spotted with crimson.

The lake trout is the largest of American trout with records of over 100 pounds.[11] They are found in almost all deep water lakes from the Alaska Peninsula to the Arctic.

## Other Alaskan Fish

The great northern pike is found north and west of the Alaska Range. Its maximum length is four feet and maximum weight is 40 pounds.[12] The northern pike is dark green or gray covered with yellow spots.

The shee fish is related to the salmon but is a fresh water fish found in Southwestern and Northwestern

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[9] Dufresne, pp. 234 and 239.

[10] Dufresne, p. 236.

[11] Dufresne, p. 243.

[12] Dufresne, p. 250.

Alaska. The sides and underneath of this fish are silver white. It has very firm, rich meat and weighs around 20 pounds.[13]

Grayling are found throughout the waterways of mainland Alaska. They have a blue upper body with gray sides and the ventral fin is striped with pink and white. Grayling are beautiful fish and good eating. They are found in clear, cold, and fast moving streams with a record of 23 inches in length and four pounds in weight.[14]

Halibut is the largest fish caught in Alaskan waters, with records of over 400 pounds. This flat dish-like fish lies at the bottom of the ocean offshore and has an excellent tasting white meat. It is caught commercially in Southeastern Alaska. Ling cod and tuna are also caught commercially.

Shellfish are not fish and are correctly called "mollusks". Mollusks have a soft body covered and protected by a hard shell. The most well-known and important mollusks in Alaska are clams, crabs, and shrimp. The clam has a three-layered shell with a thin layer on the outside, a thick strong middle layer, and a smooth pearly lining.

The dungeness crab is found in the inlets and bays of Southeastern Alaska. Dungeness meat is considered by many to be the finest sea food in the world. The Alaskan king crab, also world famous, is found around and near Kodiak Island. Crabs are unique in that if they lose a claw, they can grow a new one by regeneration.

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[13] Dufresne, p. 260. [14] Dufresne, p. 212.

Shrimp are harvested commercially in Southeastern Alaska.

## EXERCISES

1. If you live in crab country, start a collection of crab and clam shells. Cover them with shellac or varnish.
2. Draw a picture of a fish and identify the fins.
3. The next time you catch a fish, as you clean him look for, identify, and draw the following: (a) swim bladder, (b) gills, (c) pectoral fins, ventral fins, pelvic fins, dorsal fin, anal fin, and tail fin, (d) scales, (e) coloring.
4. Make a list and/or draw pictures of all the fish found in your area.

## REVIEW QUESTIONS

Tear out this page and answer the questions as you reread the chapter.

1. How many miles of ocean shoreline and how many lakes does Alaska have?
2. Why is commercial fishing so important to Alaska?
3. Why are the sport fish important to Alaska?
4. How many kinds of fish are found in Alaska?
5. What is a "swim bladder"?
6. How do fish breathe?
7. Describe how fish are colored for camouflage.
8. The _______ is the most important fish to Alaska.
9. Where in Alaska is the king salmon found?
10. Why is the trout popular with sport fishermen?
11. In what parts of Alaska are the following freshwater fish found: (a) rainbow and steelhead, (b) cutthroat, (c) dolly varden, (d) Arctic char, (e) brook trout, (f) northern pike, (g) shee fish, (h) grayling?
12. Halibut is the _______ fish caught in Alaska.
13. What is the world famous mollusk found in Alaska?

## NOTES FOR TEACHERS

Fish are important to all Alaskans. A hoped for objective of this unit is that the student will understand this importance. Commercial fishing supports many Alaskans either directly as the fisherman and his family, or indirectly as a business that supplies the fisherman.

The teacher should point out the importance of international treaties and agreements for the Alaskan fishing industry. Without these treaties the Russians, Koreans, or Japanese could fish the North Pacific so extensively that there would be little left for Alaskans.

The student should realize that sport fishing is a very important part of the Alaskan tourist income. Many people come from the Lower 48 and other parts of the world each year to fish the many Alaskan sport fishing grounds.

Commercial fishermen and sport fishermen must buy fishing licenses and the student should appreciate the value of these licenses. The fees fund the many fish conservation activities of State and Federal wildlife agencies, particularly the restocking of fish. The regulation of fishing times and areas protects the fish.

A suggested behavioral objective is that after reading this unit the student can identify, by using a live or dead fish or a picture of a fish, its gills,

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scales, fin system, color system, and be able to tell why a fish is different than a mammal.

# Chapter 10

# BIRDS

One cannot study the wildlife of Alaska without observing the birds of Alaska. Birds are important because they keep the insect population under control and dispose of the remains of dead animals and man's refuse. There are many game birds in Alaska such as the grouse, duck, goose, and ptarmigan that add to man's diet and provide him with recreation.

Birds prey on small mammals such as the mouse, squirrel, and shrew, and, in the case of eagles, the baby lambs and goats. Birds are in turn preyed upon by the larger mammals, the wolf, fox, coyote, and lynx. If we wish to consider Alaska as an ecological whole, we must give an important place to the birds and their role in maintaining the ecological balance of the Alaskan environment.[1]

Alaska has a large and varied bird life in what many would consider a harsh and inhospitable climate.

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[1] Ira N. Gabrielson and Frederick C. Lincoln, Birds of Alaska, (Harrisburg: The Telegraph Press, 1959). In this classic and very detailed book the authors describe the range, haunts, and habits of over five hundred birds that can be found in Alaska. This is a highly recommended reference work that can be used by a teacher or older students when studying Alaskan birds.

Because of the warming Japanese current much of the Alaskan coastline and the neighboring Interior has a moist, warm climate for birds and yields abundant vegetation and sea food.

Many birds from far off lands come to Alaska during the summer to nest, hatch and rear their nestlings. These birds come from all parts of the globe. Robins, warblers, wrens, thrushes, sparrows and swallows come from the lower "48". The brown and white snow bunting comes from Asia. The Arctic tern, one of the farthest travelers of all, comes over 24,000 miles each year from the Antarctic by way of Africa, Europe, and the North Atlantic.[2]

Small birds such as the woodpecker, chicadee, redpoll, siskin, and pine grosbeak stay in Alaska year around.

In studying our Alaskan birds it might be interesting to know that birds came from the reptile family. The earliest known bird is the flying dinosaur, called the "Archaeopteryx", which lived about 150 million years ago. It had no feathers but lizard-like skin stretched over wing structures, and instead of a beak it had upper and lower teeth. Birds as we know them today developed from this reptile and have existed for over a million years.[3]

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[2] Mariette S. Pilgrim, Alaska: Its History, Resources, Geography, and Government, (Caldwell, Idaho: The Caxton Printers, Ltd., 1952), p. 311.

What makes a bird a bird? A bird is a warm-blooded, egg-laying animal that has an outside covering of feathers. It has a backbone and wings although the wings are not always used for flying.

## Feathers

Feathers are the only feature which birds do not share with any other kind of animal. When we look at the beautiful feathers of the bald eagle or Steller's jay, we might overlook the fact that feathers are to birds what clothes are to people. They are the undergarments, overcoat and raincoat all in one. Look at a chicken or, if you have not seen a live chicken, look at a ptarmigan or spruce hen which when caught in a rainstorm droop their wings so the rain flows off like an oil skin. The reason water flows off a bird's back is because many birds, particularly the water fowl so common to Alaska such as the duck and goose, have oil glands on their backs at the base of the tail feathers. The bird presses these glands with his beak to force out the oil then rubs his beak over the surface of his feathers and passes it through them until they are well oiled.

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[3] Dorothy E. Shuttlesworth, Exploring Nature With Your Child, (New York: Greystone Press, 1952), p. 82.

The next time you bring wild fowl back from hunting take time to examine the feathers. You will find three distinctive parts: the quill, the barbs, and the soft fluff. The fluff which lies next to the bird's skin works the same as insulated longjohns on an Alaskan winter day.

Feathers are also important as camouflage. A good example of this is the ptarmigan found throughout mainland Alaska. During the spring, summer and fall the ptarmigan takes on the natural colors of its surroundings, while in the winter it becomes as white as snow. Other birds have brightly colored feathers that stand out from their surroundings helping them draw attention away from their mate who is setting on eggs.

## Beaks

From a bird's beak we can find clues to its eating habits, diet, and even its surroundings. Study the ducks in your area and you will see that they have a wide, flat bill that enables them to feed easily on water insects and plants. The duck takes food in its beak and holds the food until the water strains out. The sharp, horny beak of the hen would be quite useless for eating in this manner. The hen can strike into the soil for insects or seeds with its beak which is more like a pick than a scoop.

The sparrow has a sharp beak for seed-eating and the woodpecker has a beak which works like a chisel for digging in trees. The beak has two main functions which are getting food and feeding the young. It may also be used as a tool for building nests and as a weapon for attack or defense.

## Feet

Feet are also important to birds. The heron and other wading birds have long toes on their feet to distribute their weight and keep them from sinking into soft mud. The short-tailed birds use their feet as rudders during flight, and diving birds use their feet to propel them under water.

Some birds use their feet to scratch for food while others, particularly the eagles and hawks, use their long powerful talons to attack small animals. Birds may use their feet while building nests and to fight enemies.

## Eyesight

Birds are very sharp-sighted. Some, such as the hawk, have two fields of vision. The hawk, when flying so high that small animals would be indistinguishable to the human eye, uses his far-sighted field of vision to see small animals clearly, just like a hunter uses the scope on his gun. When the hawk swoops down upon his victim, he shifts to his near-sighted field of vision.

## Hearing

The more we study the bird the more versatile we find him. So far, we have found the bird sharp-eyed, sure-footed, and well-dressed. But can he hear? Does he have ears? The bird does not have ears, but he has an opening, no more than a hole in his head, that gives him hearing just as remarkable as his sight, perhaps even more so. A robin will listen for a worm, and a bird far away from you will startle when you rustle a bush.

## Flight

Of course the most remarkable thing about most birds is that they fly. Birds are able to fly because they are streamlined, have a very light body and have a wing much larger in proportion to their body than man's arms. The bird is light weight because the shafts and bones of his body are hollow. You may wish to investigate this for yourself the next time you clean a wild fowl.

Study birds in flight and you will witness a wonderful demonstration in aerodynamics. Watch the gull as it soars, using the wind to propel it, or the duck and goose flapping on takeoff so loud and powerfully you can hear them for hundreds of feet.

Almost every student in Alaska has seen the swan or goose in their grand military formation as they migrate. Migration arouses our curiosity and captures our imagination. Some species of birds have fixed travel routes they use year in and out. Some go north and south, others northwest and southeast, and still others northeast and southwest. Some birds fly at night and others during the day. Some, like the duck, fly both day and night.

Have you wondered how far and how fast birds fly when they migrate? "In making their migratory flights most birds apparently move at a rate between 20 and 50 miles per hour."[4] Some birds cover long distances by moving for hours at a steady rate while others cover short distances in bursts of high speed flying. When birds migrate they may go only as far as Southeastern Alaska or, like the duck and goose, to California, Oregon, and Washington.

## Birds of the Coastal Area

In Alaska there are four distinct geographical bird divisions. The first area includes the Panhandle, the Central Coast, and the Gulf of Alaska side of the Alaska Peninsula. This area has the most moist and warm climate of all Alaska. In this area the following birds can be found: curlews, gulls, murses, puffins, loons, snipes, plovers, grebes, tattlers, auklets, sandpipers, petrels, ducks, geese, cormorants, and many other sea birds. Most of these birds obtain their food from the sea. Also found here are small land birds such as warblers, sparrows, finches, hummingbirds and thrushes. Geese, ducks, ptarmigan, and grouse are found in great numbers as are the birds of prey, the hawks, eagles, owls, crows, ravens, and jays.[5]

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[4] Shuttlesworth, p. 35.

## Birds of the Interior

The second area is the forested Interior where most of the birds are migratory. They are ducks, geese, cranes, plovers, snipes, gulls, loons, and herons. The Interior is considered the finest nesting area for grouse and ptarmigan in the world, with good food supplies, limited numbers of hunters and no snakes. (There are no snakes anywhere in Alaska.) The main birds that prey on the smaller birds in this area are golden eagles, hawks, snowy eagles, and great horned owls. Coming from the south for the short summer season are kingfishers, woodpeckers, hummingbirds, phoebes, and tattlers. Song birds such as sparrows, waxwings, warblers, and robins also migrate into the area.[6] Those birds that winter in the area are jays, ravens, owls, ptarmigan, grouse, and eagles.

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[5] Pilgrim, p. 312. [6] Pilgrim, p. 312.

## Birds of the Arctic Coast

The third area is the Arctic Coast which provides sea food for the birds that frequent this area. The short summer is moderate and favorable for the nesting of many sea and land birds. Many East Asian birds come to this area where the 24-hour sunlight is ideal for raising young birds. Birds found on the Arctic Coast are sandpipers, warblers, and bullfinches from Asia. Those that remain north for the winter are the water ouzel, ducks, sharp-tailed grouse, ptarmigan, horned owl, and snowy owl.[7]

## Birds of the Aleutian Islands

The fourth district is the Aleutian chain where some of the hardiest birds of Alaska live on the windswept barrier shores and cliffs. Birds found in this area are the bald and golden eagles, gulls, petrels, cormorants, fulmars, ducks, sandpipers, rock ptarmigan and grouse.[8]

## Some Specific Birds of Alaska

In view of the fact that there are over 500 types of birds in Alaska, the following is but a brief introduction to some of the more well-known birds in the State.

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[7] Pilgrim, p. 315. [8] Pilgrim, p. 315.

The State bird of Alaska is the willow ptarmigan. This bird was chosen by the children of Alaska. The ptarmigan lives in all parts of the State and is the size of a small chicken. In summer the ptarmigan's feathers are buff and brown, and in winter they turn white. Since ptarmigan live on the ground this color protection is important to hide the birds from predators. Ptarmigan eat seeds, berries, and insects.

Steller's jay is easily identified by its black head, throat and breast and its long black crest. It was named after the Russian naturalist who, with the first Bering expedition, was the first European to sight mainland Alaska.

The crow and his big brother, the raven, are found throughout Alaska and are the easiest of birds to identify. The crow has an important ecological function in eating beatles, caterpillars, and slugs.

The hawk is also important to the ecology of Alaska It feeds on and keeps in numerical balance many small animals such as mice found throughout Alaska.

One of the most spectacular birds in Alaska is the bald eagle which really isn't bald but instead has a head covered with white feathers. His big brother, the golden eagle, is found only in western states and Alaska. Both of these eagles often obtain their food as bandits snatching it away from smaller birds who obtained it from the ocean, river or lakes. Eagles have been accused of carrying off small mammals such as baby lambs and even human babies but there has been no verified case of this event. The most weight a large golden eagle could carry in an experiment was six pounds.[9] Instead of carrying baby animals, the eagle attacks and kills them on the ground.

Those of you who live along the ocean in Alaska find the gull a familiar and interesting friend. Gulls are very bouyant and float on the water like a cork. They are valuable to us because they eat refuse dumped by man into the sea, and they eat the bodies of dead animals that float on the water.

The wild duck is a very good bird to study. If you have a chance to look at a duck's legs, you will see why it is so adept in the water. The legs are short and set apart far back on the duck's body and his toes are joined by a tough skin or web which makes them good paddles. There are two groups or subdivisions of ducks. One lives in fresh water lakes, rivers and ponds, and the other in salt water bays and the ocean. The fresh water ducks do very little diving but instead probe the mud and shallow water. The sea ducks are expert at diving and some can go as deep as 150 feet.[10] The mallard is a well-known fresh water duck in Alaska which also frequents salt water ponds along the coast.

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[9] Shuttlesworth, p. 64.

The goose is another noble, majestic and savory wild bird known to almost every part of Alaska. The goose stays close to the land and feeds more on land than the duck. They are both members of the same bird family. The goose's legs are not as far back as the duck's and he is able to walk and run more freely than the duck.

Male and female ducks can be distinguished by a difference in coloring whereas geese cannot be distinguished in this manner. The gander (male goose) shares the family duty of incubating the eggs and caring for the goslings.

The Canadian goose is the most common variety found on the North American continent. In Alaska, with the coming of frost, these birds are organized by their leader to head south in the familiar V formation with the lead gander at the forward point. Generally these birds will rest at night if able to find a suitable lake, large pond or bay. When they are unable to find a safe resting, it is not unusual for them to fly day and night non-stop for as far as 1,000 miles.[11]

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[10] Shuttlesworth, p. 71.

Another member of the same bird family is the swan which is undoubtedly the most inspiring and beautiful bird found in Alaska. These lovely white birds are also seen in the V formation over Alaska as they migrate south. Swans and the bald eagle (our national symbol) are nearly extinct in the "lower 48".

If you should be lucky enough to rescue an injured bird or baby bird separated from his parents, remember that a bird eats an enormous quantity of food. It is not unusual for a baby robin to eat fourteen inches of earthworms in one day.[12] Therefore, it is necessary to give your bird plenty of food such as meal worms, grated hard-boiled egg yolks, bread, milk, and berries.

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[11] Shuttlesworth, p. 74. [12] Shuttlesworth, p. 66.

## EXERCISES

1. In the fall, after the birds are through using their nests, collect them and identify the birds they belonged to.
2. Take a bird walk. Early morning is the best time since most birds are active then. Know what you are looking for and where you are going before you start out.
3. List and illustrate the beaks of the birds common to your area of Alaska. Show by the shape what the beak is used for.
4. Study the plummage (feathers) of each bird in your area of Alaska and decide if its feathers are used to camouflage or distract.
5. Make a chart of the birds in your area. Include name, sex, young, location, date.
6. Draw the birds you have seen.
7. Fill in the game bird outlines with proper coloration and markings.
8. Alaska, with its very defined four seasons and sharp weather contrasts, is a perfect place to study migrations. You can keep track of the comings and goings of different birds on a bird calendar. If many students in the class participate you can see

who observes the greatest number of birds in a given time.

9. A good project is to attract birds by building houses and shelters, and, most important, by providing winter food by sprinkling crumbs and seeds or hanging suet.

## REVIEW QUESTIONS

Tear out this page and answer the questions as you reread the chapter.

1. Why are birds important to the ecological balance of the Alaskan environment?
2. What is the major reason for Alaska's abundant wildlife?
3. How far does the Arctic tern travel in its migration?
4. What animal family did birds originally come from?
5. What was the "archaeopteryx"?
6. How long have birds as we know them existed?
7. Make a list of the things that make a bird a bird.
8. What is the only feature a bird has that other animals do not have?
9. Feathers are to birds as ________ are to people.
10. Why does water flow off a bird's body?
11. List the three parts of a feather.
12. How do bird feathers act as camouflage?
13. List the different types of beaks and how they are used.
14. How are feet important to birds?
15. How does the hawk use his two fields of vision?
16. Does a bird have ears? Can he hear? Explain.
17. List the characteristics of a bird that make flight

possible.

18. What are the four geographical bird divisions in Alaska?
19. How many kinds of birds are found in Alaska?
20. What is the State bird of Alaska? Where in Alaska can it be found? How does it protect itself from predators?
21. What is the ecological function of the crow?
22. What is the ecological function of the hawk?
23. What is the ecological function of the gull?
24. List the various ways a duck is adapted to its environment.

## NOTES FOR TEACHERS

The following are some behavioral objectives suggested for this chapter.

1. The student should be able, by making a list, chart, or picture, to show where the bird fits into the chain of life. Example: Water fowl are between plants and sea life which they feed on and man and other predators which feed on the water fowl. Example: The scavenger birds clean up refuse left by man and the remains of dead animals.

2. The student should explain by listing or by pictures (a) why a bird is a bird and not a mammal, (b) why a bird can fly, (c) why the feathers, beak, and feet are important to a bird.

3. The student should write an essay on why scavengers such as the bald eagle and hawk are important to our ecosystem.

## Chapter 11

## TRACKS

Tracking animals in Alaska can be a very profitable experience since we have snow a good part of the year and many rivers, lakes and shorelines with mud flats to show tracks well. The best way to learn to identify tracks is in your own backyard where you can find the tracks of dogs, cats, rabbits and squirrels. The cat track is identical to, but smaller than, the lynx track, and the dog track is the same as the wolf track, but also smaller. The bear makes a flatfooted or plantigrade track with most of the foot shown in the track. Tree climbing animals leave tracks of their front feet side by side, whereas animals that stay on the ground have one foot in front of the other.[1]

In following animal tracks you can discover some very exciting events such as the place where a weasel pounced on a squirrel or a snowy owl attacked a mouse. Animal tracks tell the story of an animal and everything he does even though you do not see him. From his tracks we can tell an animal's movement, speed, and direction, his habits and his characteristics.

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[1] Dorothy E. Shuttlesworth, Exploring Nature With Your Child, (New York: Greystone Press, 1952), p. 88.

Environment has played an important part in the development of animal tracks. Moose and caribou live in marshes, tundra, muskeg, and snow, and have wide-spreading feet to support their great weight. The lynx, Arctic fox, ruffed grouse, and varying hare all have natural snowshoes for feet which allow them easy traveling on snow. Mountain animals like sheep and goats are single toenail walkers. Water animals like the beaver have webbed feet. Animals of the cat and dog family walk on their soft padded toes, with the cat family retracting their claws, and the dogs leaving their claw prints. Tree climbers, like the porcupine and squirrel, have long claws.

## Animal Groups

There are two ways to group animals for tracking. One is into four groups by body proportion and the other is into three groups by types of feet.

The four groups by body proportion are determined by the total body make-up of the animal. The first group includes animals that are evenly proportioned in height, weight, and length, such as deer, moose, bear, and wolves. The second group is animals whose hind legs are out of proportion to its front legs, like the hare and squirrel. Group three is those animals with long bodies and short legs like the weasel family. Group four is animals who have short heavy-set bodies with short legs, such as the porcupine.[2]

The three-group division of animals is based on the feet and how they support the animals. The first group are flat-footed animals such as the bear, man, beaver, and porcupine. The hind feet of this group are larger than the front feet. The second group are toe walkers like cats, dogs, wolves, foxes, coyotes, and lynx. The third group are toenail walkers, or those animals who actually walk on their toenails, such as deer, elk, caribou, moose, sheep, goats, musk oxen, bison, and cattle and horses.[3]

## Recognizing Tracks

The best way to learn to recognize tracks is to start with backyard and barnyard animals that are close at hand. It is difficult to tell the difference between the tracks of a large dog and a wolf, both of which are "toe walkers." Both have claws that show, with the front feet being bigger than the hind and with only four of their five toes showing. The main difference is that the domesticated dog always approaches things and objects directly, whereas the wolf is always stalking and never approaches anything directly. Wolf prints are usually overlapping.

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[2] Ellsworth Jaeger, Tracks and Trailcraft, (New York: The Macmillan Company, 1948), p. 38.

[3] Jaeger, p. 38.

Get out the family cat and have it walk in the snow. Its tracks are padded and it keeps its claws withdrawn so they do not show in the track. The cat, although domestic, is very good to follow since it stalks just as a lynx does. Cat tracks have the same shape as lynx tracks but they are smaller in size.

The squirrel is also found near many backyards. This is a "bounder" animal like the rabbit and when the squirrel is bounding, his hind feet are directly behind his front feet.

There are cows and pigs on farms in the Matanuska Valley and near Fairbanks and few guides work without horses so you may see barnyard animal tracks. The horse, cow, and pigs are toenail walkers. The horse's front feet are wider and rounder than the hind. Most horses are shod which makes their track very easy to distinguish. Cows and pigs have cloven (split) hoofs which are roughly similar to the deer, caribou, and moose. Domesticated geese and ducks make the same tracks as their wild brothers and sisters.

## TRACKS FOUND IN ALASKA

In Alaska one can find more different types of animal tracks than anywhere else in the world, outside of Africa. The following make up a list of some of the tracks found in Alaska.

### The Lynx

The lynx of the carnivorous cat family makes two different types of tracks, one in the summer and one in the winter. Lynx tracks in the summer, particularly in mud or damp earth, look just like large cat tracks. In the winter, due to his padded feet, the tracks look like round snowshoes.

### The Dog Family

The tracks of the carnivorous dog family are many and varied since to this family belong the wolf, coyote, and various foxes. These dog family members all are toe walkers similar to the cat family but their claws show as part of their tracks. All of these animals have similar tracks except for size and depth of imprint. A wolf has the largest track measuring around five inches long and showing most of the toe pads. The coyote has the same size print as an average dog and because it is half the weight of a wolf it makes less of an imprint and shows less of the toe pads. The red fox makes the smallest of the padded toe tracks. His are about two-and-a-half inches long. The Arctic fox makes the smallest dog print of all, averaging one-and-five-eighths inches long. His pads do not show since he has fur covering them which makes a small snowshoe-like track.[4]

## Bear Tracks

Bear family tracks are probably the easiest to follow due to their depth and size, and they are the most exciting. Bears belong to the flat foot group and their claws make up part of their tracks. Bears make and use trails that are deeply rutted and easy to follow. The black bear's track is the smallest of Alaskan bears, averaging six inches for the hind and five inches for the front feet.[5] Since their claws are the smallest they show the least.

The grizzly is a bigger bear and therefore has a larger and deeper print than the black bear. His tracks average twice the size, or 12 inches for the hind and eight for the front. The grizzly's claws are the longest of all, measuring approximately three-and-a-half inches and they show best in the tracks.[6]

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[4] Jaeger, p. 69 and 73. [5] Jaeger, p. 77.

The giant brown bear has the largest and deepest track of all, measuring 14 to 16 inches in length. The rarest of all bear tracks is the polar bear's which averages 12 to 15 inches in length.[7]

## Weasel

The least weasel and the common weasel have the same track except the least weasel's is smaller. The least weasel's tracks are about three-fourths inch long and the common weasel's tracks are one-and-a-half inches long.[8]

## Mink

Mink tracks are about one-and-three-eighths inches long and, because the mink is slightly heavier and larger, his tracks are deeper with more pad showing. Between tracks there is a space about 12 inches long with the tail making a slight rut.[9]

## Marten

The three foot long marten has a track one-and-a-half inches long and is similar to the weasel but larger.[10]

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[6] Jaeger, p. 77. [7] Jaeger, p. 80. [8] Jaeger, p. 89.

[9] Jaeger, p. 91. [10] Jaeger, p. 91.

## Otter

The short-legged otter creates a furrow as he travels with his footprints within the furrow. His slide can be found along river banks and especially in the snow. Both the front and hind feet have five toes. His track is about two-and-a-half inches wide and two-and-a-half inches long.[11]

The sea otter prefers the safety of the ocean to land but occasionally his tracks can be found in the sand and mud of the shoreline. The forefoot is blunt and has four toes that look squeezed together. The hind foot is a five-toed, webbed, flipper-like paw about six inches long with fur on both sides.[12]

## Wolverine

The wolverine's tracks at first glance look like wolf tracks, but the fifth toe and nail show in the wolverine's track. Also, being a short and squat animal, the wolverine leaves a furrow.

## Hoofed Animals

With the hoofed animals the dew claws are important for walking in snow or on soft ground. The dew claws spread the weight of the animal over a greater area. The hoof of the Sitka blacktail deer is about three inches long.[13] The buck deer points his toes outward.

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[11] Jaeger, p. 93. [12] Jaeger, p. 96.

The elk's hoofs will measure up to four-and-a-half inches in length and three-and-a-half inches in width. A strange difference between the tracks of the bull and cow elk is that the bull's hoofs are close together and the cow's hoofs are spread apart. Also the bull's hoofs are more blunted and the dew claws are thicker and more blunt. Like the buck deer, the bull elk points his toes outward.[14]

The average moose track is seven inches long with the bull's being rounder and blunter than the cow's. Also, the distance between the dew claws and hoofs is more in the bull. Like the elk and deer, the bull points his toes outward and the cow points inward. The bull's steps are greater than the cow's.[15]

The caribou, or deer of the tundra, has the longest dew claws of the deer family. They reach the ground even when the caribou is on hard ground. The caribou's average track is seven-and-a-half inches long and in relation to his weight, his track is four times larger than the moose allowing easy travel in swamps and snow.[16]

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[13] Jaeger, p. 106.

[14] Jaeger, p. 106.

[15] Jaeger, p. 109.

[16] Jaeger, p. 112.

The musk ox has hoofs averaging five-and-a-half inches on the front legs and four-and-a-half inches on the hind legs. They are much more rounded than the other hoofed animals.[17]

The bison's hoofs are about five-and-a-half inches long and because of his great weight the tracks are spread wide apart.[18]

## Beaver

The beaver has five toes on both his front paws and his back webbed feet. The webbed feet are about six-and-a-half inches long.[19] He walks with his toes pointed in. The beaver's tail leaves a broad flat trail between his tracks.

## Porcupine

The porcupine has four toes on his front feet and five on his hind feet. He also walks with his toes in, and his claws are usually part of the track. He does not have webbed feet. His tracks are about four-and-a-half inches long.[20]

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[17] Jaeger, p. 117.

[18] Jaeger, p. 119.

[19] Jaeger, p. 140.

[20] Jaeger, p. 140.

Hare

The snowshoe or varying hare tracks are seven inches long for the hind feet which make it appear to be all feet. When it is speeding, it leaps eight to ten feet.[21]

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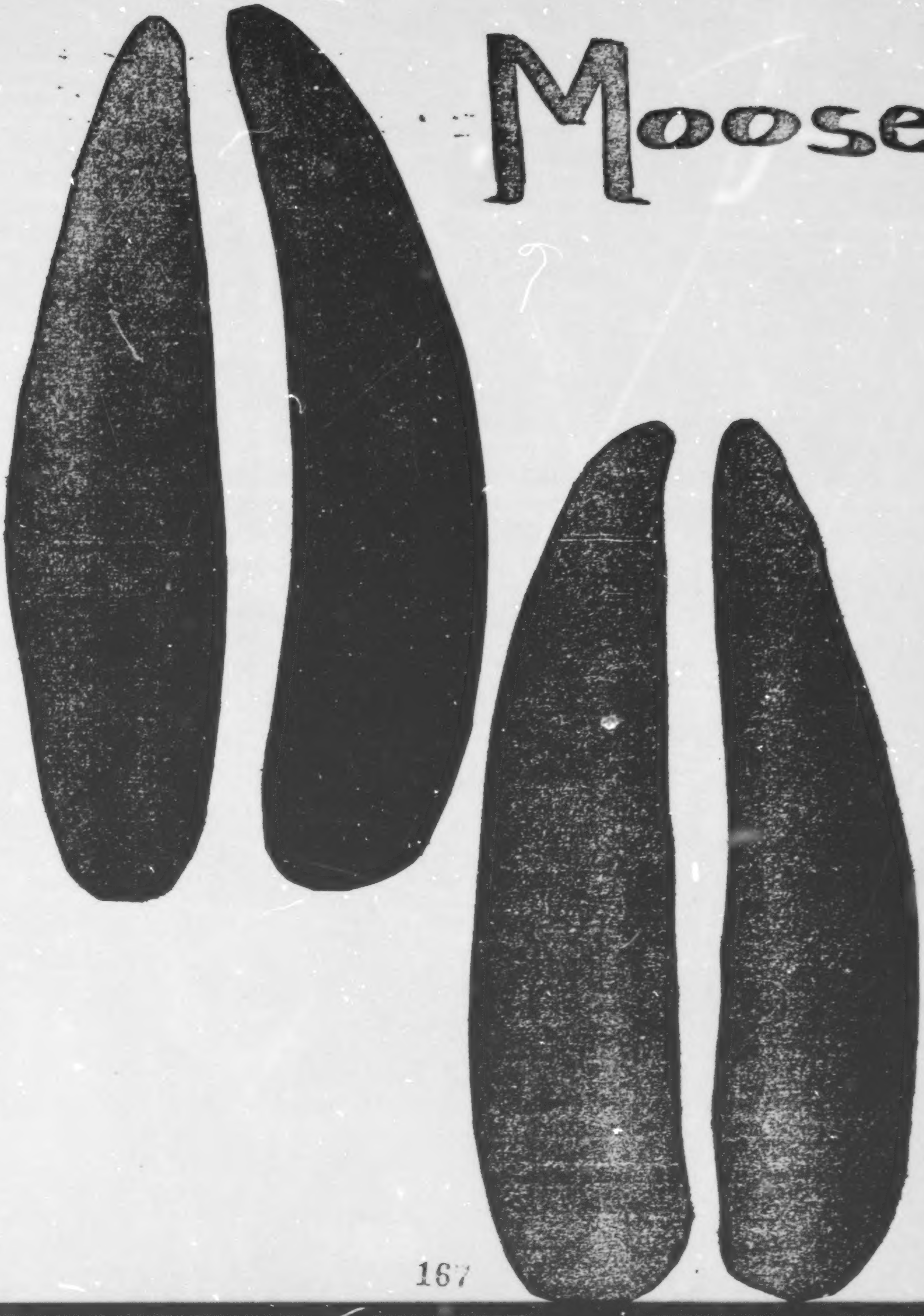
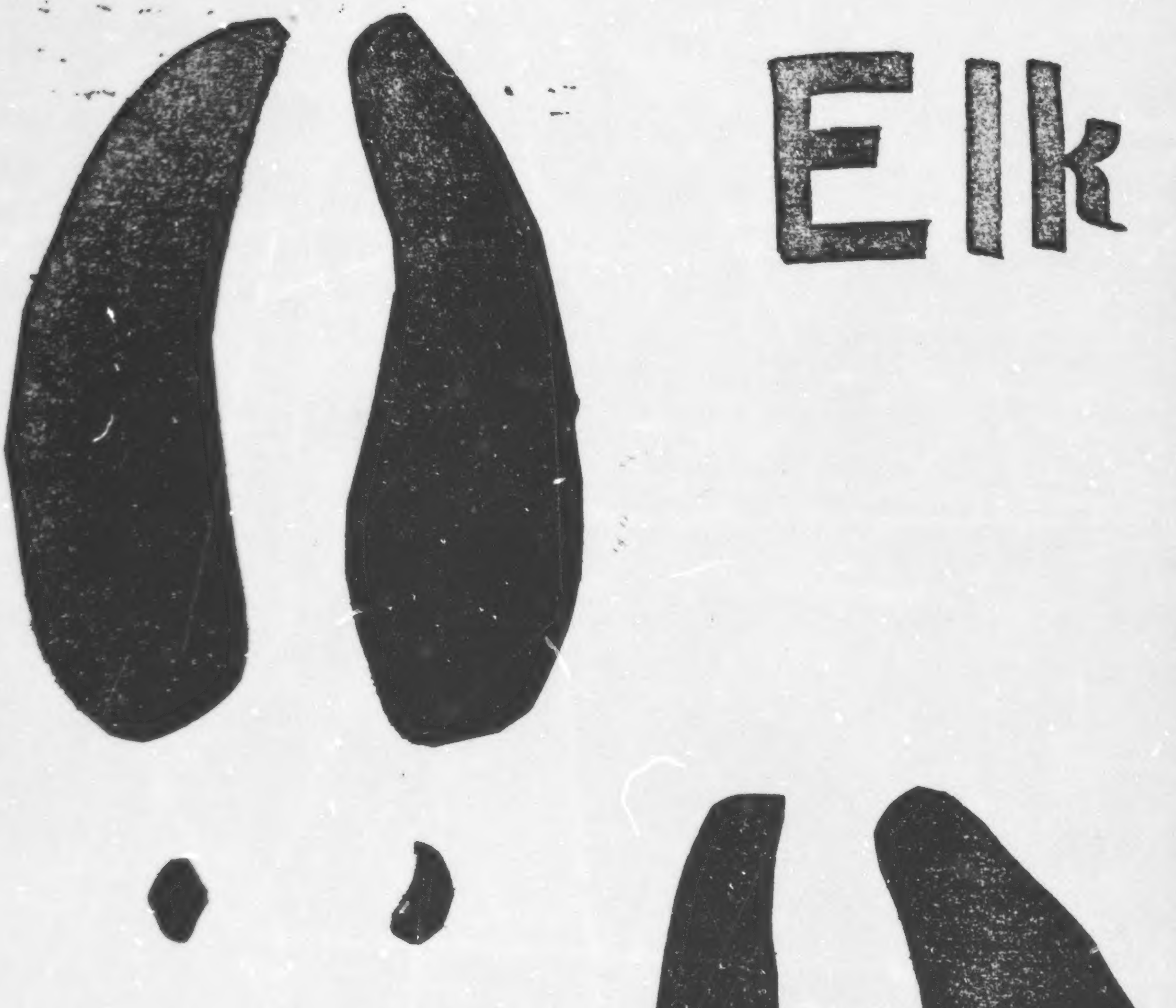
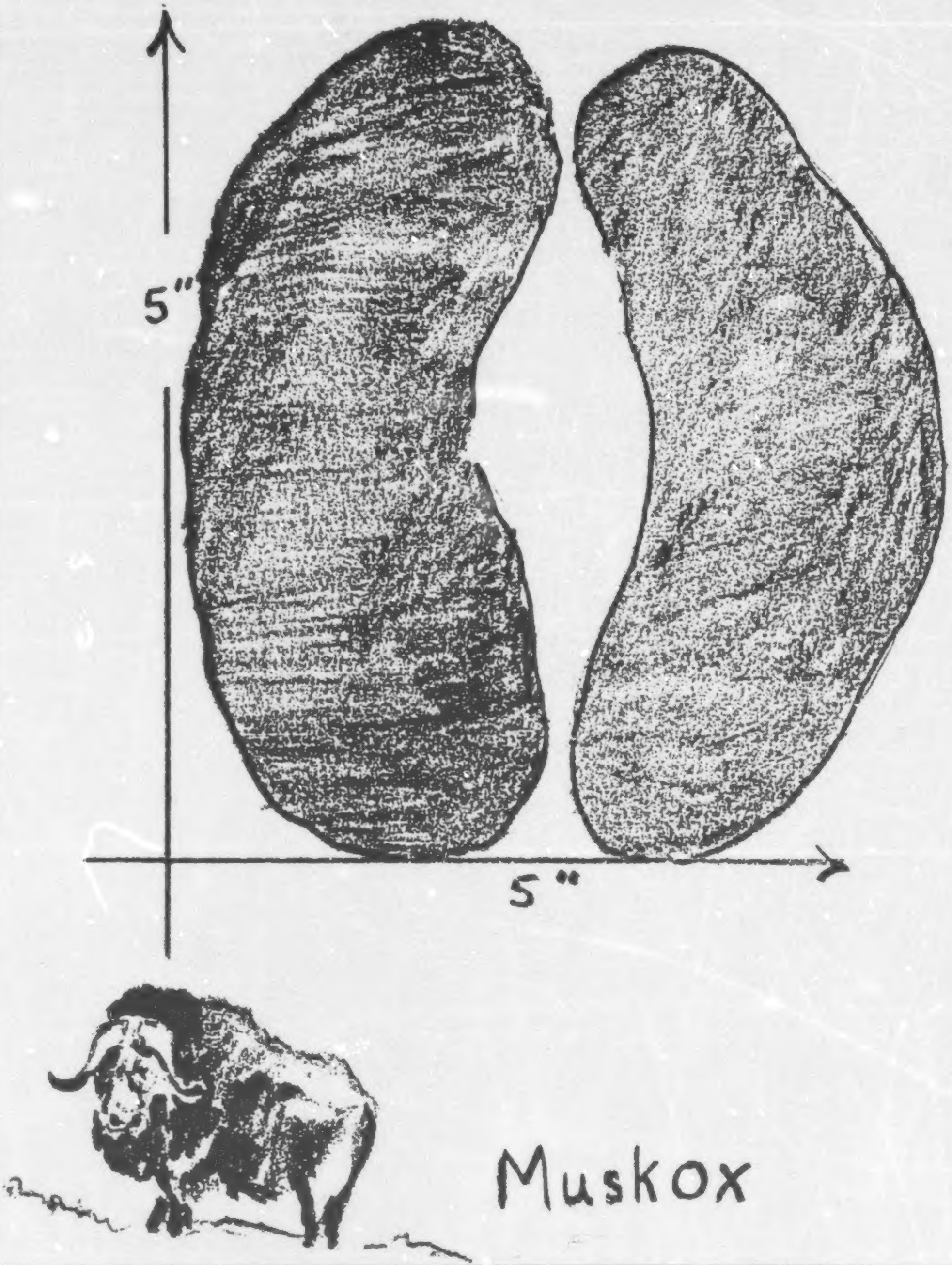
[21] Jaeger, p. 145.

Moose

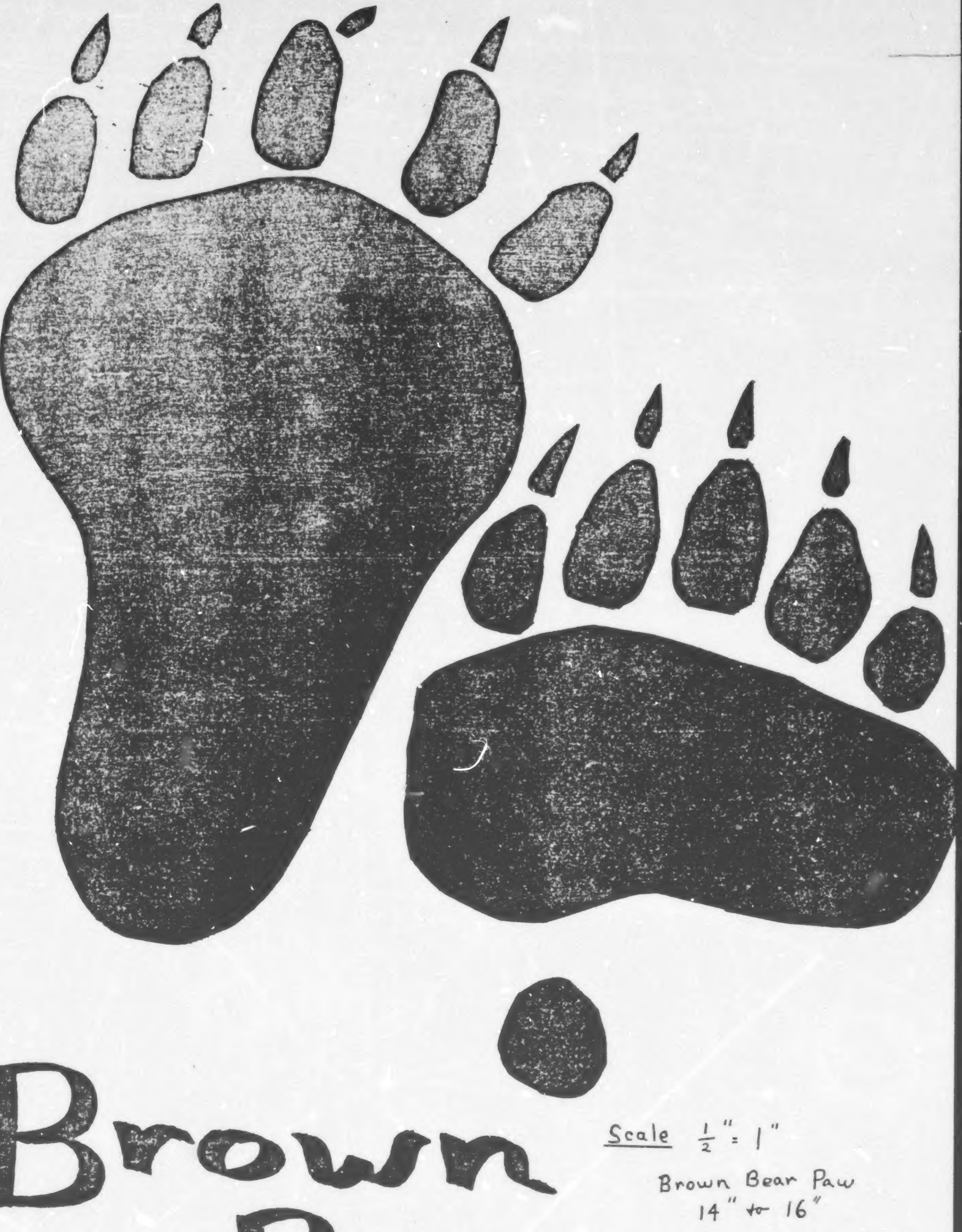


# Elk





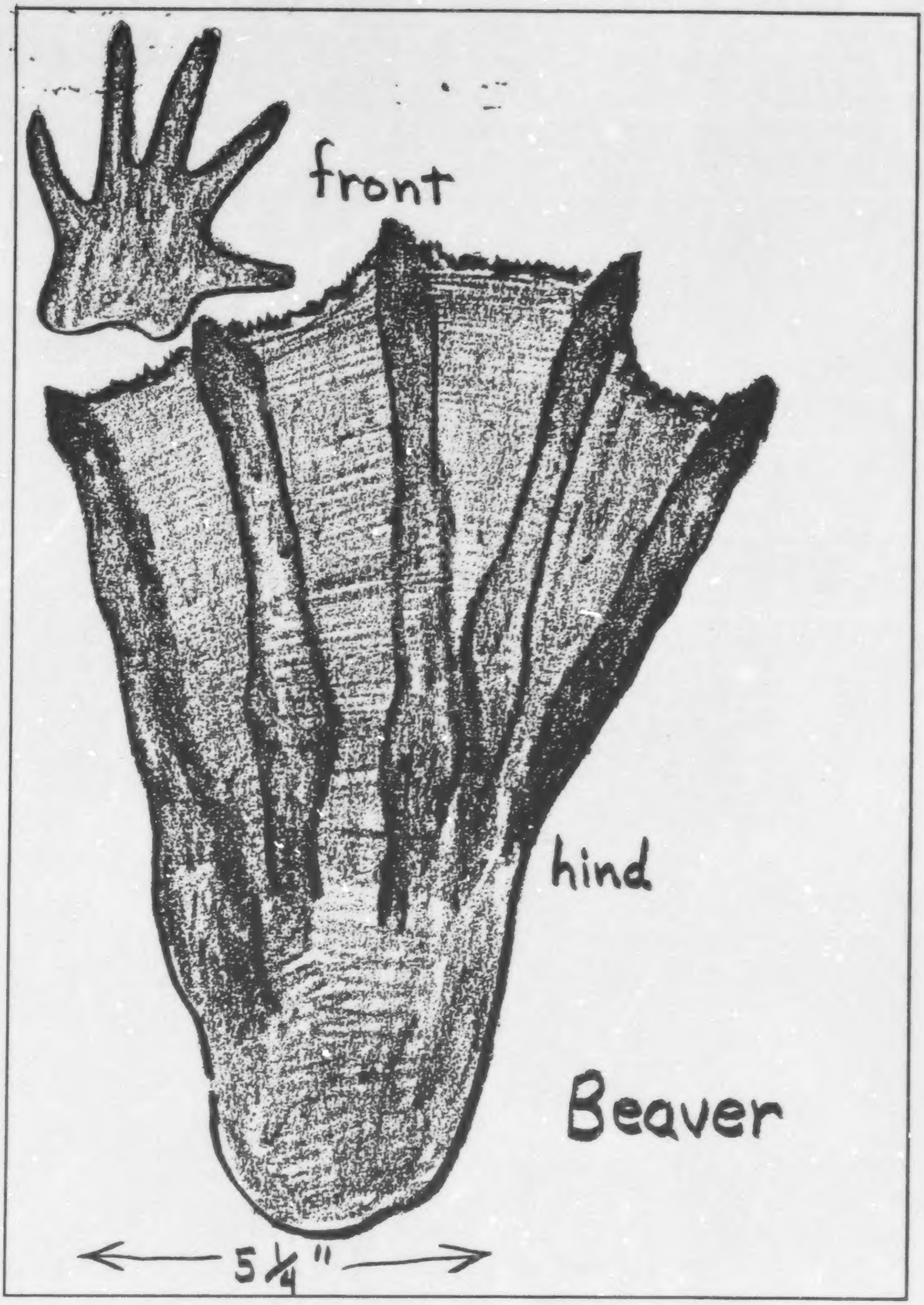
Muskox

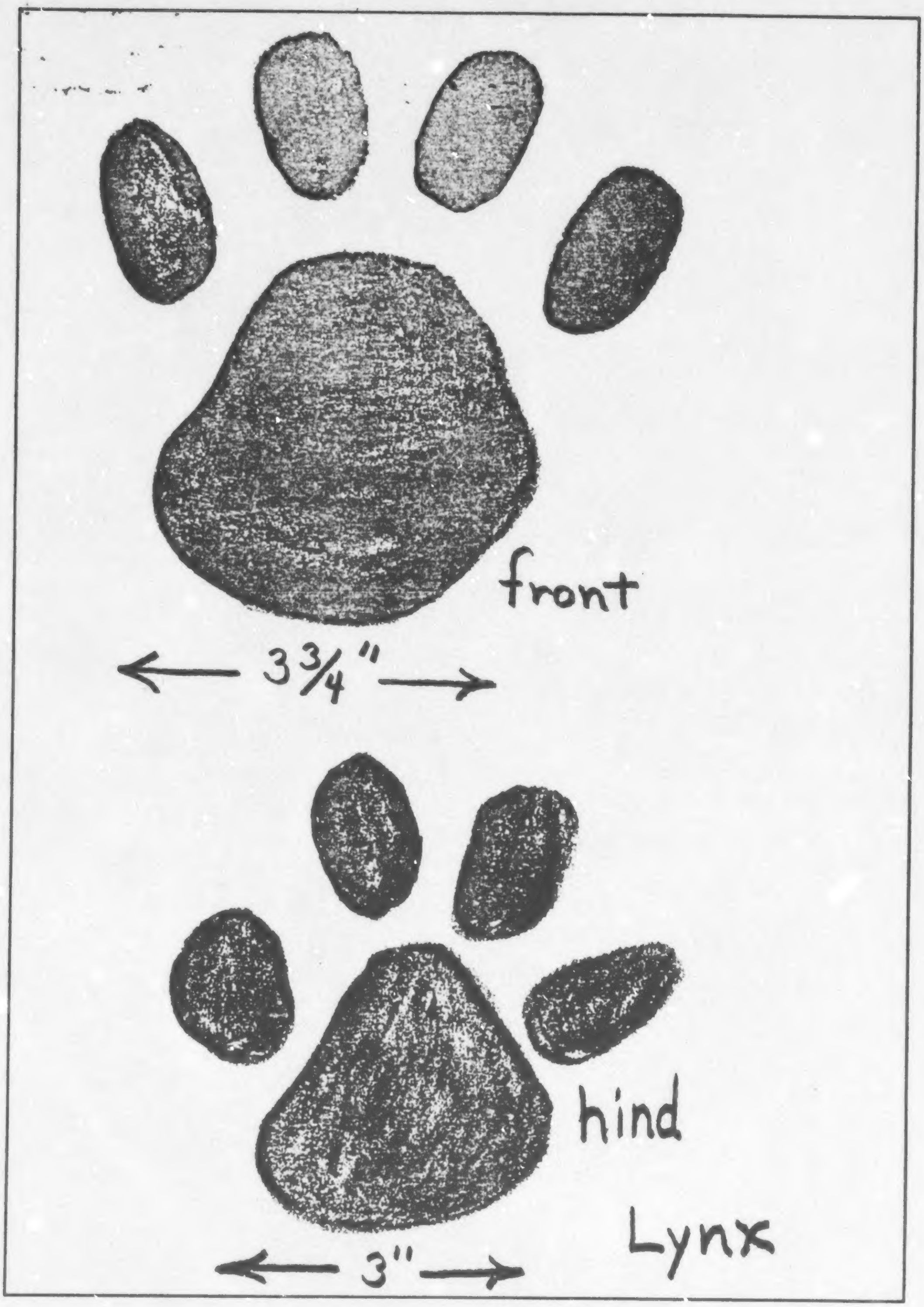


# Brown Bear

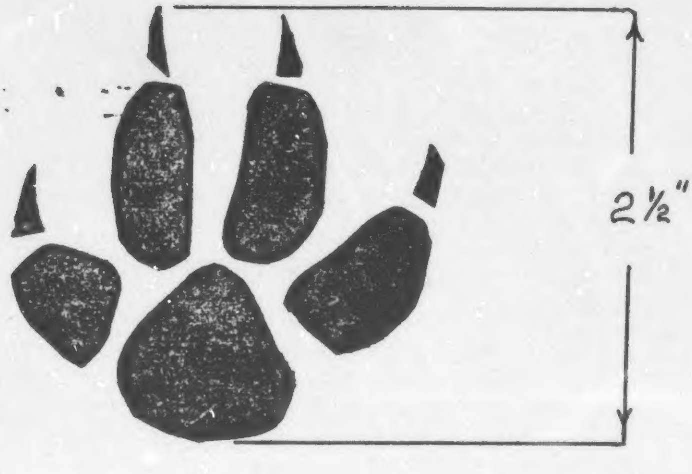
Scale ½" = 1"

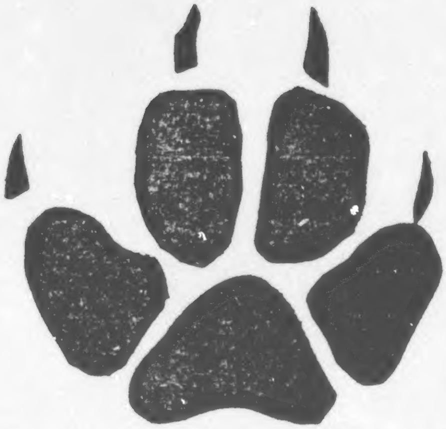
Brown Bear Paw
14" to 16"


front
hind
Beaver
5 1/4"


front
3¾"
hind
3"

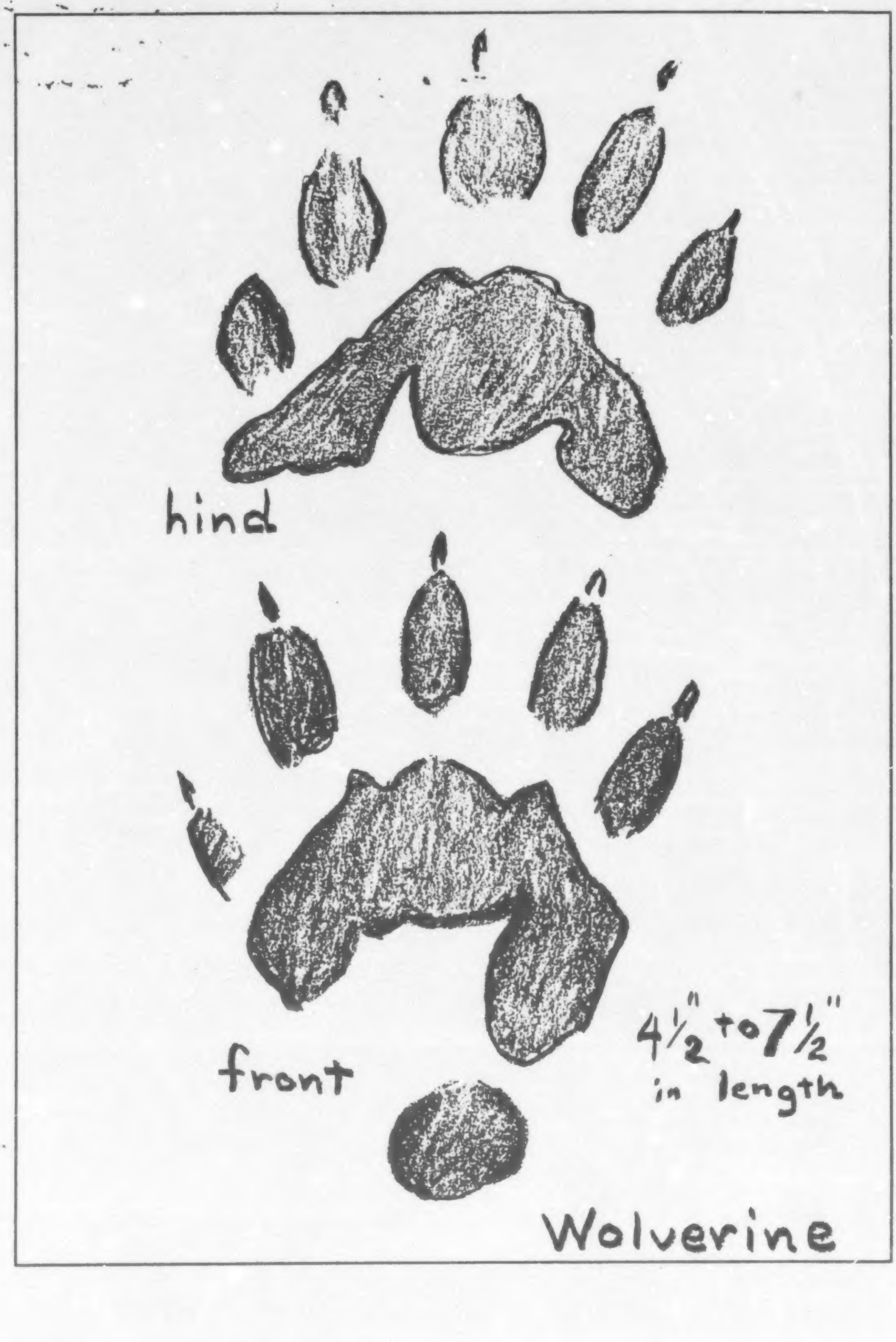
Lynx

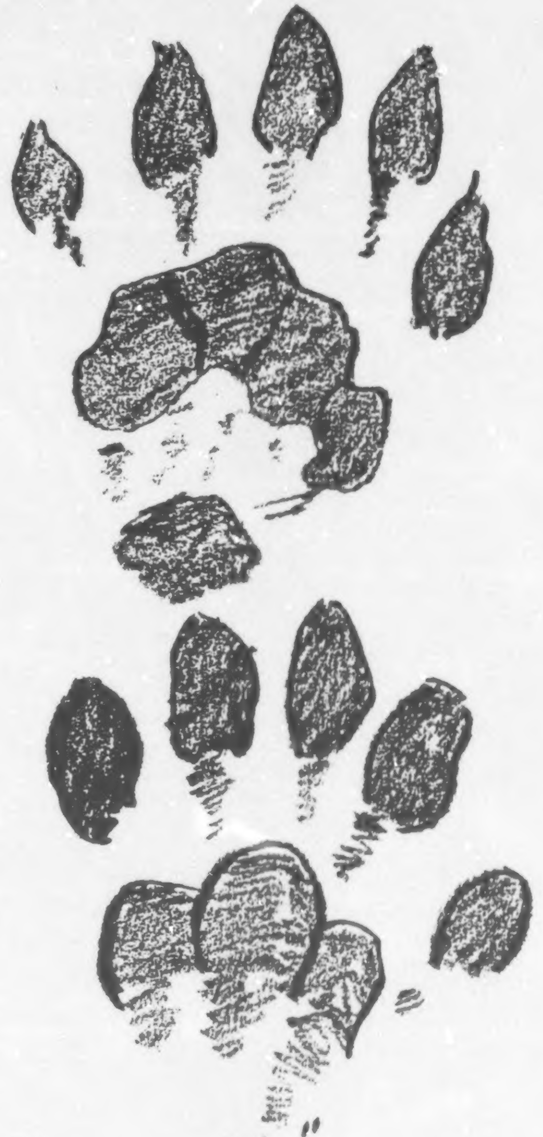


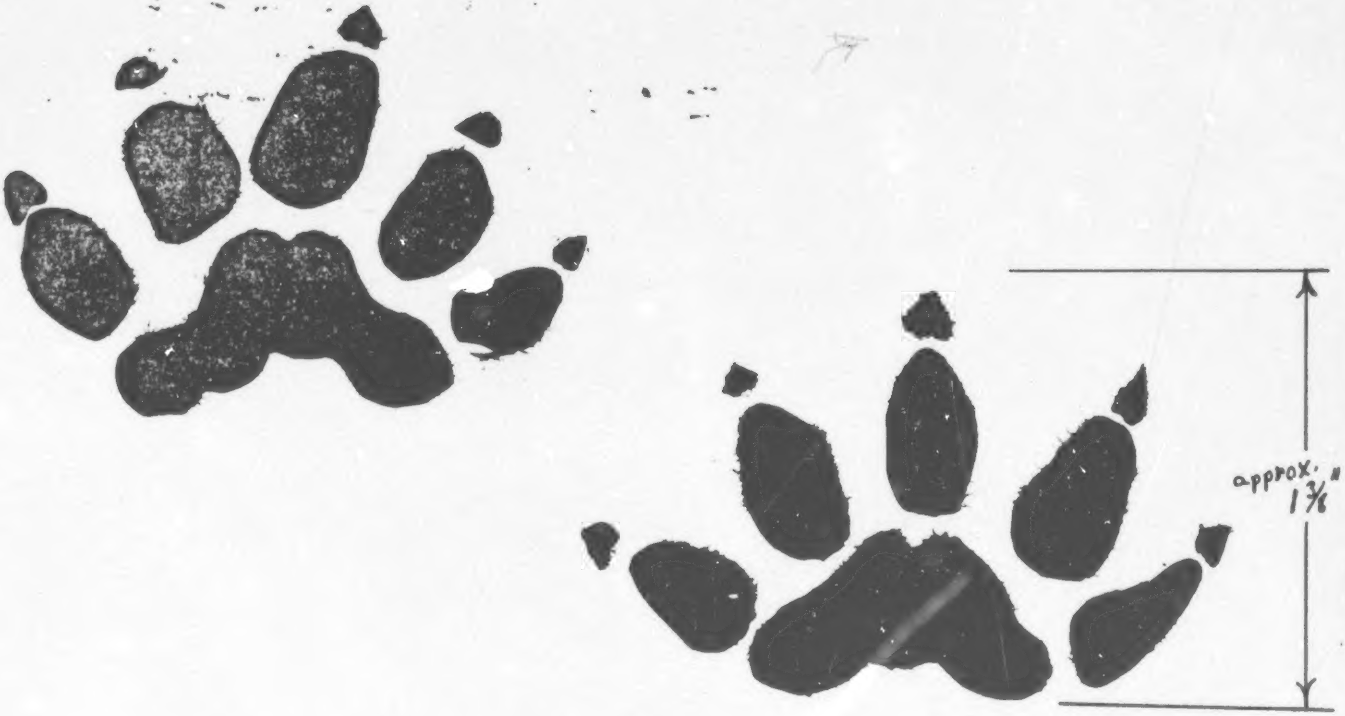


# Red Fox

Actual Size


hind
front
$4\frac{1}{2}$" to $7\frac{1}{2}$"
in length
Wolverine

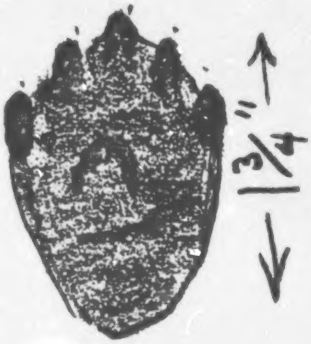

3¼"
Otter



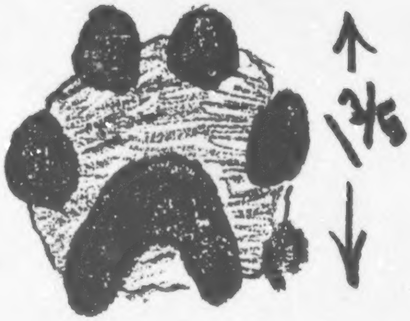
Tracks = 1 3/8" long

Scale: 2"=1"

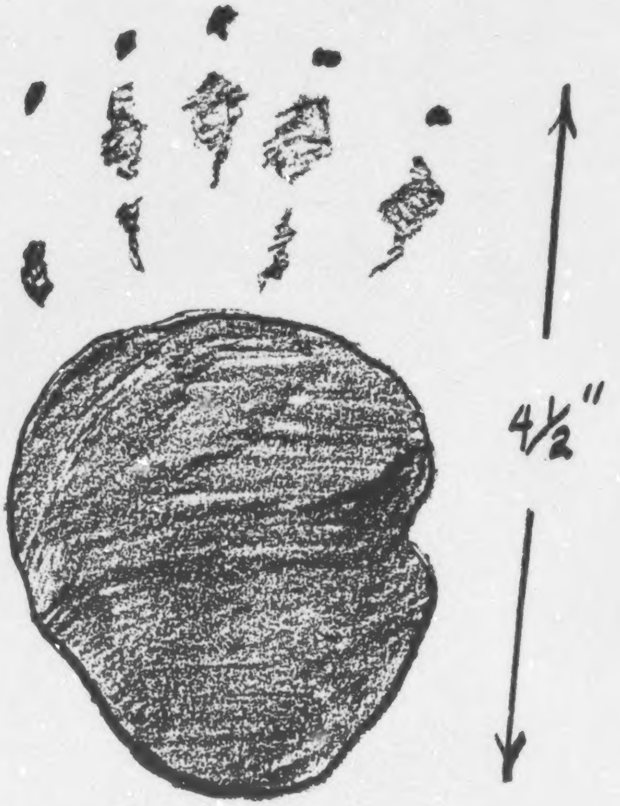
# Mink



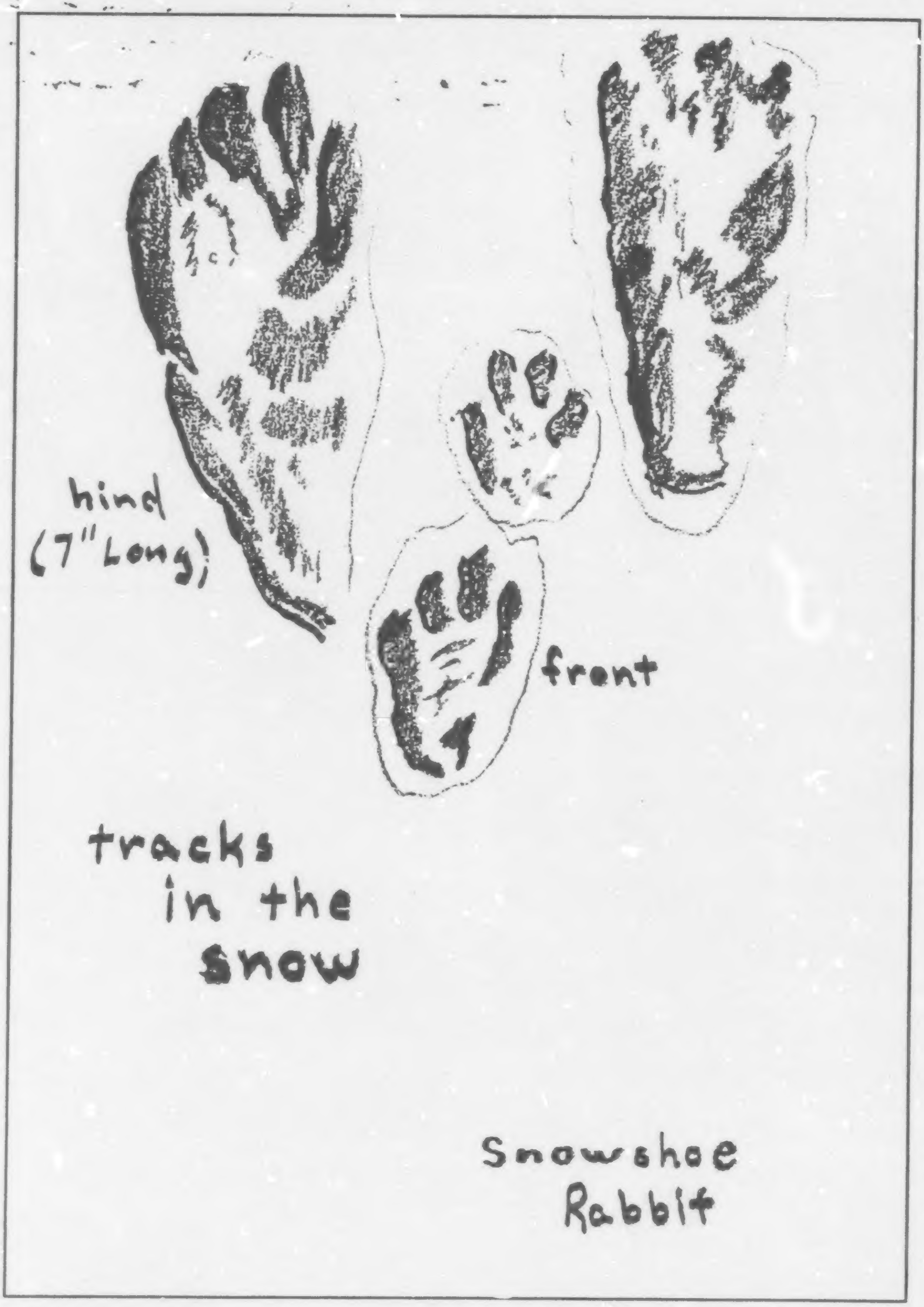
Weasel



Marten



Porcupine


hind
(7" Long)
front
tracks
in the
snow
Snowshoe
Rabbit

# EXERCISES

1. Collecting tracks is simple and fun. The easiest way is to simply sketch those you see, or you can photograph them, or make casts of them.
2. The easiest way to preserve a track is by making mud casts. Mix some clay in a thick smooth soup with some water. Pour a thin coating of bacon grease or oil into the track. Build a dry clay ridge around the track and pour the liquid clay into it.
3. Plaster and wax casts can be made by pouring the plaster or molten wax into the track surrounded by a circle of cardboard material.
4. Clear a flat area of ground about 25 or 50 feet square. Place a flat stone in the center with food on it. Rake the area smooth, or cover it with fine dust, ashes, or sand. Check each morning for tracks and record your finds.
5. Primary children may like to draw the tracks they see on dark construction paper and mount them on white paper for silhouettes.

## TRACKING GAMES

1. After a fresh snow have each student follow a particular animal track with pencil and paper for observation. All meet at a given spot at a certain time and have each student interpret what his animal was doing.
2. Make a pair of wooden animal tracks that lash to boots. Have a student wearing these tracks start ten minutes ahead and drop 100 beans and 30 potato skins at given intervals. The bean counts one point, the potato two, and finding the "animal" ten.
3. Have a track quiz by drawing large tracks on cardboard or paper. Divide students into two groups like a spelling bee with those unable to identify the track sitting down.
4. Find an old "ecologically active" tree and in a given time limit have each student list all of the animals that use the tree for a home. The largest list of acceptable animals wins.

## REVIEW QUESTIONS

Tear out this page and answer the questions as you reread the chapter.

1. The cat track is similar to the ________ track.
2. The dog track is similar to the ________ track.
3. How has environment effected the type of tracks made by the moose and caribou, the lynx and varying hare?
4. What are the two ways to group animals for tracking?
5. List the groups of feet.
6. How can you tell the difference between a wolf and a large dog?
7. What are cloven hoofs?
8. Cows and pigs have hoofs similar to ________.
9. What does the lynx track look like in the winter?
10. Dog family members are all ________ walkers.
11. Other than size, what is the difference between cat family tracks and dog family tracks?
12. Why don't the pads show in the track of an Arctic fox?
13. Why are bears easy to track?
14. What is the difference between a wolverine's tracks and those of a wolf?
15. Why are dew claws important?
16. How much larger is the caribou's track in relation to its weight than that of the moose? Why?

17. What other track does the beaver make on the ground or snow besides his foot print?

## NOTES FOR TEACHERS

In most wildlife books a discussion of animal tracks is briefly included with each particular animal. I have included a special chapter on tracks because this knowledge is necessary for studying wildlife in the field. Even in Alaska wild animals cannot always be observed when desired, but usually their tracks can be seen. Using a little imagination the student can study a track and picture in his mind the animal that made the track, its size and sex, and what it was doing. Tracks tell us the types and numbers of particular animals in an area. A knowledge of tracks is also necessary for the successful hunter.

Alaska is an ideal place for animal track study since the land is covered with snow much of the year and many rivers, marshes, lakes, and beaches provide damp ground. Some suggested basic objectives would be as follows.

1. The student can correlate specific animal tracks to general animal families, i.e., the wolf, coyote, and fox belong to the dog family and make tracks similar to the domestic dog. The moose, caribou and deer are hoofed animals and make tracks similar to the domestic cow.

2. The student should be able to classify a given

animal into which of the four groups of tracks by proportion and three groups of tracks by support it belongs.

3. After studying this chapter in the classroom and studying actual tracks of the animals of his area, the student should be able to identify unassisted the more common tracks of wild animals where he lives--as determined by the teacher on an individual basis.

4. The student should be able to demonstrate at least one method of preserving tracks.